STRATEGIC & TACTICAL CONSIDERATIONS ON THE FIREGROUND

THIRD EDITION

James P. Smith

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Preparation

“ Firefighting is an art and not a science. You can't always predict the exact outcome of an event even if you have good information. Yet there is a need to make predictions based upon one's experience and training. Since the incident scene is dynamic and constantly changing, we must adjust, or change as it changes. This will ensure that our actions will allow us to prevail in accomplishing our goals to protect life and property. ”

—James P. Smith

irefighters must anticipate changing conditions and ensure that apparatus is operating at safe locations. *Used with permission of Joseph Hoffman.*

KEY TERMS

behavior of fire, *p. 2*

command presence, *p. 28*

firefighter life safety
  initiatives, *p. 31*

fire officer, *p. 10*

needed fire flow, *p. 17*

preincident planning, *p. 12*

training, *p. 8*

OBJECTIVES

Upon completion of this chapter, the reader should be able to:

- Discuss the behavior of fire.
- Understand the benefits of training for the firefighter, company officer, and the fire department.
- Discuss the benefits of preplanning.
- Understand how to calculate needed fire flow.
- Recognize the duties of both company and chief officers.
- Identify the traits of a person with command presence.
- Identify and discuss the 16 firefighter life safety initiatives.

Firefighters who respond to emergencies must be prepared to handle whatever they encounter. Their success is dependent on the training they receive. This training must encompass basic and advanced areas. Chapter 1 first examines the **behavior of fire**; it reviews the basic concept of training, preincident planning, and how prior knowledge of a building can assist in accomplishing an overall safe operation.

The needed fire flow can be utilized by fire officers to assist them in determining the necessary amount of water flow and personnel needed to handle hose-lines at an incident scene.

Chapter 1 further discusses company and chief officers, the importance of these positions, and what these men and women must accomplish to serve the fire department and the firefighters that they lead. It also reviews the 16 life safety initiatives that, if followed, will keep firefighters safe.

Behavior of Fire

Fire is a chemical process in which fuel, oxygen, and heat come together in an uninhibited chain reaction. It involves the rapid oxidation of a combustible material producing heat and flame. In order to have fire in common materials, these three elements (fuel, oxygen, and heat) are required and are often represented as consisting of a fire triangle. (See Figure 1-1)

A fire triangle will cease to exist if any one of the three sides is removed. (Fire can exist in atmospheres containing oxidizers other than oxygen, e.g., chlorine, but for this discussion we will focus only on oxygen.)

■ Fuel may be eliminated by removing it.
■ Oxygen may be eliminated by excluding air.
■ Heat may be eliminated by cooling.

In most cases, the removal of fuel from a fire is impractical. However, flammable liquid storage tanks are sometimes arranged so that if one should catch fire, its contents may be pumped to an isolated empty tank. Thus, the fire is extinguished by removing the fuel. Fires in other flammable liquids that are flowing from a pipe and burning can be extinguished if the pipe contains a valve and the flow of fuel can be shut off. This, in effect, removes the fuel supplying the fire.

The exclusion of oxygen from a fire may be affected by covering the fire, as with dirt, foam, or a wet blanket, so that air cannot reach it. The placing of a lid over a burning pan of oil on a stove will extinguish the fire by excluding air. Oxygen may also be reduced by blanketing the fire with another gas heavier than air. This displaces oxygen from the fire area, which can occur when applying carbon dioxide onto a fire. The application of the above extinguishing agents excludes air from the fire and in doing so removes the oxygen necessary for combustion.

Reduction in temperature, or cooling, can be accomplished by the application of a substance that absorbs heat. Water is most commonly used for this purpose. It absorbs heat first by being raised to its boiling point and second by being turned from boiling water into steam. The heat that is absorbed is taken from the fire and reduces its temperature accordingly.

FIRE TETRAHEDRON

Research has found that in addition to removing one of the three elements of the fire triangle to extinguish a fire, there is actually a fourth method. This method is referred to as the fire tetrahedron or the fourth side of a triangle. The fire tetrahedron is an uninhibited "chemical chain reaction" that occurs when fuel is broken down by heat and

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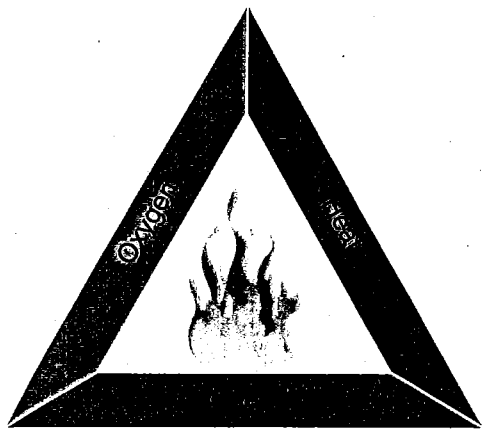 work
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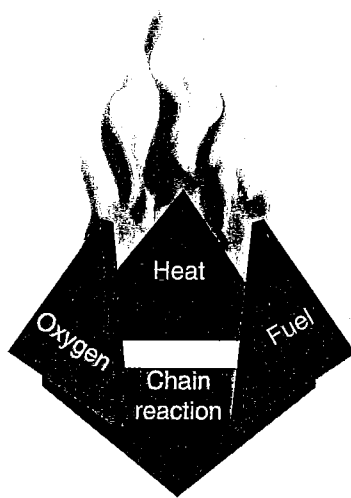 open

FIGURE 1-1 Fire Triangle.

FIGURE 1-2 Fire Tetrahedron.

the fire is extinguished as the chemical chain reaction is interrupted by an extinguishing agent. (See Figure 1-2)

CLASSES OF FIRES

There are different systems for classifying fires that are in use worldwide. The United States places fires into one of five classes for purposes of extinguishment and to identify which fire extinguisher to use. Those classes are A, B, C, D, and K. There are many types of fire-extinguishing methods; some of the more common methods are listed below.

Class A Fires

Class A fires are those involving ordinary combustible materials: wood, paper, textile, etc.

Class A fires are commonly extinguished with water, or a method that uses water and an additive, or with fire extinguishers.
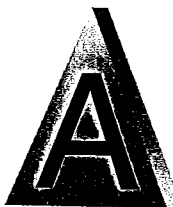
The additives used with water are wet water, Class A foam, and high expansion foam. They are all used to increase water's effectiveness.

- Wet water accomplishes this by reducing the surface tension of water, making it much easier to be absorbed by a burning material. This can help extinguish a fire that is deep-seated, such as in bales, overstuffed furniture, mattresses, etc.
- Class A foam is a liquid foam solution that is made by introducing air into a mixture of water and concentrate. Bubbles from the foam blanket adhere to fuels and gradually release the water they contain to continue to wet fuels for a longer period of time than water alone. Due to the addition of the air bubbles and the expansion of the foam, Class A foam provides a larger contact area with the burning surface to increase heat absorption. By adhering to surfaces it can also be used to protect unburned materials. Surfactants contained in the solution reduce surface tension and allow water to penetrate fuels to reach deep-seated fire.
- High expansion foam can be supplied from expansion rates of 200 to 1 and up to 1000 to 1. It is delivered through large sleeves pushed by high-powered fans. It works by producing a cooling blanket of foam and excluding air from the burning material. It can be used for basement fires as well as holds on ships. For it to be effective, hose-lines that deliver water to fight the fire must be shut down in the intended area to prevent the water from breaking down the foam. There must be an opening for the foam to be introduced and another opening past the fire to allow

the foam to flow and fill the area. If a ventilation opening is not provided past the fire area, such as in a confined space with only one opening, the foam will not flow properly into the fire area and will prove to be ineffective. Likewise, any obstructions, such as closed doors or doors blocked by debris, will restrict flow and reduce the foam's effectiveness.
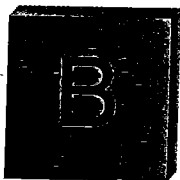
Class A fire extinguishers consist of pressurized water extinguishers, multipurpose dry chemical extinguishers, etc.

- The pressurized water extinguisher contains water and may contain a wetting agent. The extinguisher is pressurized by an air compressor. It is effective on small fires and can produce a 40- to 50-foot stream of water.
- The multipurpose dry chemical fire extinguisher contains ammonium phosphate and is rated for Class A fires. It is a powder-based agent that extinguishes by smothering, cooling, and radiation shielding, but studies suggest that a chain-breaking reaction in the flame is the principal cause of extinguishment. The rapidity of extinguishment is due to the interference of the dry chemical particles with the propagation of the combustion chain reaction, which reduces the concentration of "free" radicals present in the flames. To accomplish this, the dry chemical must become thermally decomposed. The discharge of dry chemical into the flames prevents reactive particles from coming together and continuing the combustion chain reaction. It is referred to as the chain-breaking mechanism of extinguishment.
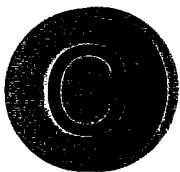
Fire extinguishers for Class A fires are marked with a green triangle containing the letter A. (See Figure 1-3)

Ordinary combustibles

FIGURE 1-3 Class A Fire Symbol.

Class B Fires

Class B fires are those involving flammable liquids, combustible liquids, petroleum greases, tars, oils, solvents, lacquers, alcohols, and flammable gases.

These fires are extinguished by using foam and fire extinguishers.

Class B foam is used to fight flammable and combustible fires. It is noted as Class B foam to distinguish it from Class A foam. Some Class B foams can be thick and viscous, forming tough heat-resistant blankets over burning liquid surfaces and vertical surfaces, while other foams can be thinner and spread more rapidly. Some foams are capable of forming a vapor film of surface active water solution on a liquid surface, and some are meant to be used as large volumes of wet gas cells for inundating surfaces and filling cavities.

Dry chemical fire extinguishers can be used to control and extinguish flammable liquid fires.

Fire extinguishers for Class B fires are marked with a red square containing the letter B. (See Figure 1-4)

Flammable liquids

FIGURE 1-4
Class B Fire Symbol.

Class C Fires

Class C fires are those involving energized electrical equipment.

These fires are extinguished by using extinguishers that will not conduct electricity.

Dry chemical and carbon dioxide (CO_2) fire extinguishers are used for extinguishing fires involving energized electrical equipment.

Carbon dioxide is a compressed gas that prevents combustion by displacing the oxygen in the air surrounding a fire and by cooling the fuel. An excellent benefit of using carbon dioxide fire extinguishers is that they leave no residue.

Fire extinguishers for Class C fires are marked with a blue circle containing the letter C. (See Figure 1-5)

Electrical equipment

FIGURE 1-5 Class C Fire Symbol.

Class D Fires

Class D fires are those involving combustible metals: aluminum, magnesium, titanium, sodium, and potassium.

These fires are commonly fought with special types of fire extinguishers for fighting metal fires. As a general rule water should not be used on metal fires. The reaction when water is applied to a burning combustible metal can range from minor to explosive. The exception is that in some instances water can be successful if applied in large quantities to a small combustible metal fire, but a severe reaction that could be explosive should be anticipated.

Fire extinguishers for Class D fires are marked with a five-pointed yellow star containing the letter D. (See Figure 1-6) Ensure that the correct Class D extinguisher is used for the burning material.

Class K Fires

Class K fires are fires in cooking appliances that involve vegetable oils, animal oils, or fats.
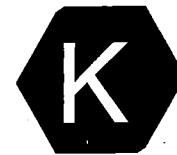
These fires are commonly fought with fire extinguishers specifically intended for them and are generally found in commercial kitchens.

Fire extinguishers for Class K fires are marked with the letter K, or a black hexagon containing the letter K may be indicated on the extinguisher. (See Figure 1-7)

D

Combustible
metals

FIGURE 1-6 Class D Fire Symbol.

K

Combustible
cooking

FIGURE 1-7 Class K Fire Symbol.

SPREAD OF HEAT

Heat is generated when a combustible material comes in contact with a heat source. If there is sufficient oxygen the combustible material will burn. The heat generated by the fire can spread to other materials in the room where the fire started, to adjacent rooms, and to other areas within the original fire building. Depending upon many factors, if the fire is left to burn unabated, it can spread to nearby structures. This spread of fire is dependent upon:

- amount of heat generated by the fire
- distance or spacing between buildings
- duration of the fire
- height of the buildings (since taller buildings that are exposed to lower buildings can have multiple floors at risk)
- type of building construction (frame buildings would be more susceptible than a fire-resistive building)
- other factors

METHODS OF HEAT TRANSFER

In addition to direct contact with the flames of a fire there are three ways that heat travels and causes a fire to extend to other areas or other buildings. They are through conduction, convection, and radiation.

Conduction

Heat is transferred by conduction through contact of materials. When different materials touch, the material with the greater temperature will transfer heat to the material with the lower temperature until the temperatures of both materials are identical. An example of conduction of fire is when floor joists are set in the same wall socket in adjoining buildings and are in contact with each other. Heavy fire involving a joist in one structure can spread undetected to a joist in the adjacent building. The ease of the spread of fire via

conduction depends upon the materials involved. Metal is a good conductor and once heated it can ignite combustibles that are in contact with it, even at a distance from the original fire.

Convection

Convection is heat that is conducted by a gas or liquid. Air currents allow heat to rise through a structure if unimpeded by doors, walls, or ceilings. Once these air currents reach the top of a fire area, the smoke and heat will mushroom and start to spread laterally. As the smoke and heat fill the upper parts of the fire area, it will start to bank downward. This movement of heated air currents can spread the fire to uninvolved areas. Staircases are a ready path for convective air currents to spread fire from lower to upper floors. This is especially true in multistory single-family residential structures where staircases are usually unenclosed. Likewise, the proper use of ventilation by firefighters can channel the heat and smoke generated by a fire, and vent it to the exterior to reduce its spread.

Radiation

Heat from a fire is radiated in all directions, including back toward the fire, which helps accelerate the chain reaction process. The rays travel in straight lines and in all directions from the fire and continue to travel until their heat is dissipated, or they meet an object. If the object is combustible, the radiated heat can cause it to ignite. If the object is non-combustible, like a masonry wall, the rays will heat the object and the object absorbs the heat. Depending upon the material it can dissipate the heat through conduction, or ignite and start to burn. Exterior fires that require protection of exposed buildings can often be protected by water streams being applied to the exposed surfaces to keep them cool and prevent ignition.

THE STAGES OF FIRE

Fire will go through various stages from inception until extinguishment. There are five stages of fire:

1. Ignition
2. Growth
3. Flashover
4. Fully developed
5. Decay

Ignition Stage

This is the initial stage as the fuel, oxygen, heat, and the uninhibited chemical chain reaction come together. Material is heated from a source, and the fire normally starts small and is referred to as being in an incipient stage.

Growth Stage

The next stage is the growth stage in which the fire starts to develop depending upon the amount of fuel and oxygen that is available and the absence of built-in fire-extinguishing systems. An abundance of fuel and oxygen will allow a fire to develop rapidly. The contents of the room or area in which the fire originated will become heated as the temperature of the fire increases. This increase in temperature will generate additional heat, smoke particulates, and toxic products of combustion, primarily in a gaseous form. Heat and smoke will rise throughout the fire area (the fire area can be a room, a number of rooms, an entire floor, or an entire building, depending upon the presence or absence of fire stops) until it reaches the top level and starts to bank down, filling it with super-heated smoke and gases. As the temperature builds to over 1000 degrees Fahrenheit (F), superheated gases will increase within the fire area, and if a sufficient amount of oxygen is available, it will near flashover stage. Unlike in the ignition or incipient stage when a

fire can be quickly controlled by a minimum of firefighters, the larger fire will require a greater fire department response.

Flashover Stage

The flashover stage of a fire does not always occur. There must be sufficient fuel and oxygen for the fire to reach flashover. The flashover stage is the transition between the growth stage and a fully developed stage. What occurs is the temperature in the fire area rises rapidly as the gaseous products of combustion reach their ignition temperature and are ignited, which increases the intensity of the fire. The temperature of flashover is estimated between 900 and 1100 degrees F.

Flashover is a simultaneous ignition of the surface area of the combustible materials in the fire space. The fire's intensity will be dependent upon sufficient oxygen to sustain the burning. Ventilation openings can supply a source of air to the fire as firefighters enter the fire area to extinguish the fire. Ceiling temperatures can easily exceed 1300 degrees F.

Fully Developed Stage

The fully developed stage occurs when all combustible materials in the fire area are involved in fire. The heat released by the burning material will be at its maximum. As in the flashover stage, continued burning will be dependent on a sufficient supply of fuel and oxygen. Temperatures can exceed 2000 degrees F.

Decay Stage

The decay stage occurs when the oxygen or fuel starts to diminish. When the burning materials are consumed, the fire will start to decay. This process will produce large volumes of smoke that contain carbon monoxide. The fire may also start to decay due to the lack of oxygen. What occurs is that the smoke reduces the available oxygen and slows down the burning process so that temperatures decline. This lack of oxygen can, however, create a smoldering state that could set the stage for a backdraft or what is referred to as a "smoke explosion."

ON SCENE

Carbon monoxide (CO) is an odorless, colorless gas commonly encountered by firefighters at every fire. In addition to fires, its presence can be caused by a variety of household defects, including a defective heater or a blocked chimney. Because CO cannot be detected, occupants are often sickened by its fumes. At low levels of concentration, CO can cause headaches and dizziness before incapacitation. The installation of CO detectors in buildings is a positive step toward its early detection.

At one medical response a patient was displaying symptoms (headaches and dizziness) similar to her recent ailment, which had required hospitalization. The medic unit requested an engine company to assist in her removal so she could be transported to the hospital. As the members were preparing her, a male occupant in the same room passed out. As one of the paramedics went to assist him, she too passed out, and the other paramedic starting exhibiting signs of lightheadedness. The lieutenant of the engine company had the two paramedics immediately taken to the exterior. He called for additional assistance and members donned self-contained breathing apparatus, reentered the structure, and removed the two occupants who were transported to the hospital along with the two paramedics and three firefighters. Though the engine company had initiated ventilation, on arrival of the battalion chief, the testing of the structure for CO showed extremely high concentrations, especially in the basement where it was found that the source was a defective heater.

This incident was the impetus for installing clip-on CO monitors to first responder medical bags that are carried on medic units and first responder engine and ladder companies. The monitor is always active. It enters a structure with the first person and will sound an alarm when encountering high levels of CO. This relatively inexpensive tool has proven invaluable by alerting firefighters and paramedics on many responses.

ROLLOVER, FLASHOVER, BACKDRAFT

Rollover   The term *rollover* is used to describe the fire or flame front that often is observed rolling along in front of burning materials. A combustible gas is produced and liberated from the material that is ablaze. This gas mixes with air (oxygen) in order to burn. Because the combustible material that is burning consumes tremendous amounts of air, there may be a limited amount of oxygen in the upper levels of the room to support combustion of all the fuel being produced. This fuel-rich atmosphere will be pushed in front of the fire by the thermal column of heat from the fire and may not come within its flammable limits until it is several feet away from the main body of the fire. This is especially true in confined areas such as hallways. It is often observed that the fire seems to be rolling along at ceiling level at a distance of 10 to 20 feet ahead of the main fire. What is actually being witnessed is a fuel-rich mixture being pushed well ahead of the fire. When it comes into its flammable limits (mixture of air and fuel gas) it burns. This is described as the fire rolling over.

Flashover   A basic definition of *flashover* is the ignition of combustibles in an area heated by convection, radiation, or a combination of the two. The combustible substances in a room are heated to their ignition point, which results in an almost simultaneous combustion of all the materials. Because the entire area is preheated to its ignition temperature, it can become fully involved in fire in a matter of seconds. Some of the warning signs of imminent flashover are intense heat, free-burning fire, unburned articles starting to smoke, and fog streams turning to steam a short distance from the nozzle. To reduce the chance of flashover, temperatures need to be lowered quickly by ventilation and water application.

Backdraft   As a fire develops, the combustion process creates an atmosphere that is deficient in oxygen and can lead to the possibility of a *backdraft* or smoke explosion occurring. The difference between flashover and backdraft is the amount of oxygen present. In flashover, there is adequate oxygen available for combustion and the fire is free-burning prior to flashover. In a backdraft, there is insufficient oxygen for active burning, and the fire is smoldering.

Sufficient oxygen is present during most fires so that the conditions leading to backdraft are rare. However, when oxygen is depleted and the fire begins to smolder, an oxygen-deficient atmosphere is created in the fire area. When a condition like this develops, it produces gases such as carbon monoxide and carbonaceous-particle smoke that are capable of reacting with oxygen. This poses an explosion threat if oxygen is allowed to enter the structure because the accumulated gases will ignite readily, spreading fire or causing a violent explosion. Due to the high temperatures in the room, the fuel evolves into ignitable vapors at or above their ignition temperature. All that is needed is oxygen to complete the fire triangle.

When backdraft conditions are present and oxygen is introduced before the inside pressure is relieved, an explosion can occur. This is especially true when the oxygen is introduced from a lower area. The potential for backdraft exists in buildings, rooms, attics, or any other confined space.

The action required when a backdraft situation is recognized is to provide adequate ventilation above the fire. Ventilation is the first priority and must precede fire attack under backdraft conditions. This will relieve the pressure, venting the heat and smoke to the exterior. After proper ventilation is performed, rapid fire involvement must be anticipated as fresh air is introduced into the previously unvented area.

Training

training ■ The backbone of every fire department; encompasses basic and advanced areas.

Training is the backbone of a fire department. It produces a well-prepared force that through repetition can increase the speed of an operation and enhance proper execution while reducing injuries.

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Firefighters who arrive at an emergency unprepared can be faced with life-and-death situations and will find themselves under extreme stress to perform the necessary duties.

Training benefits everyone: the firefighter, the company officer, the fire department, and the community. Let's review how training benefits each group.
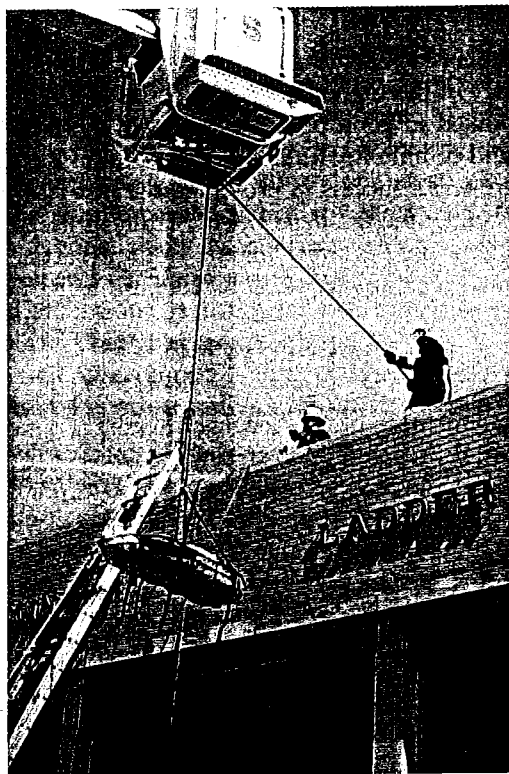
FIREFIGHTER BENEFIT

All fire department members need training. New members need to learn basic skills. Senior members need the training as a refresher and to keep their skills sharp. (See Figure 1-8)

As firefighters improve their skills, they experience less fumbling and fewer errors. They are able to gain confidence in themselves, since they can perform their job at a high level. They develop pride in themselves and in their department. Training allows for continuous growth in their ability and prepares them to assume more responsibility while grooming them for promotions. As firefighters are promoted through the officer ranks, they should constantly receive training to allow them to better understand and accept the new roles they will be assuming and the responsibility they will be undertaking. The promotion of a firefighter allows that individual to continue in the role of fighting fires, which he or she should be quite familiar with. Yet there are many other aspects of training, supervision, leadership, and communications that need to be learned.

COMPANY OFFICER BENEFIT

The company officer reaps many benefits from a highly trained crew. There is better control over operations. The training frees the officer from interruption by unnecessary workers' questions, allowing more time for the officer to assume greater responsibility. It improves the firefighters' overall ability and the officer has less fear of emergencies. The relationship between the officer and the firefighters becomes more pleasant and fewer troubles exist. This results in the officer having job satisfaction instead of job headaches.

DEPARTMENT BENEFIT

The department as a whole is a beneficiary, since training allows for constantly improved operations. The efficiency of the fire department is recognized by the citizens it protects, and it can be directly linked to good public relations. This leads to public support and support by politicians and community leaders. It will assist in the passage of bills that can be vital for a fire department's success in providing the necessary services to the public, which will continue to benefit the fire department. Training keeps morale at a high level, which, though intangible, facilitates every function of a department. The firefighter will operate in a pleasant environment and will look forward to participation in the various departmental functions.

PREPARATION IS REQUIRED

Training exercises, though, must be challenging. Reading from a text is boring and counterproductive. To conduct an interesting training exercise, the officer has to be knowledgeable and prepared. This involves prior reading and research to ensure that the goals of the training exercise will be attained. In addition to textbooks in the firehouse and the training bureau, outside sources should be explored. The National Fire Academy is an excellent resource. Its Learning Resource Center offers a wealth of information and research at no cost. Utilizing the data it provides will enhance any training exercise. Additionally, there is an abundance of information online that can be downloaded and utilized.

The Learning Resource Center (LRC) is located at the National Emergency Training Center Campus in Emmitsburg, MD. This is a library that supports fire service management, training, emergency medical services, and emergency management. It supports fire service students and faculty with research and curriculum development and design. The library contains over 100,000 books, reports, magazines, and audiovisual material. It participates in "interlibrary loan," which makes the material available to virtually anyone associated with a cooperating library. For research or additional information LRC can be contacted at 1-800-638-1821.

An officer can maintain interest in the subject by asking questions and seeking input from all participants. A tool to add interest in a training exercise is to utilize local buildings or potential hazards and seek input of the members. Drawing from the experience of each member allows for a well-rounded exercise. It also permits the officer conducting the training to reap the benefits of the firefighters' experiences while letting the officer recognize each member's level of expertise.

Training permits mistakes to be made and corrected in a nonemergency setting. The **fire officer** can take the time to stop a training exercise and point out correct procedures. He or she can explain what problems can arise when firefighters fail to use the correct method, including difficulties that can occur if shortcuts are taken.

Training fosters teamwork and cooperation. Training can be accomplished formally through drills and practical evolutions or informally by explaining policies and procedures. Members can set goals and discuss their individual progress with their commanding officers.

fire officer ▪
Usually holds the rank of lieutenant or captain and has the responsibility for leading an engine or ladder/truck company.

PERFORMANCE STANDARDS

A department that establishes performance standards or timed evolutions for engine and truck/ladder companies and then trains utilizing that criteria will be better prepared to handle the varied problems that occur at an incident scene.

Development of these evolutions can start by stretching an attack line into the first floor of a structure while hooking up to a hydrant or obtaining a water supply from a water tender. This basic evolution can then be changed to placing a portable ladder and stretching a hose-line up the ladder and through a window.

Each evolution can become more complex by including additional functions. The agenda can be expanded to placing master stream devices in operation. Ladder companies or tower ladders can place their apparatus into operation for simulated fires requiring elevated streams, rescues from upper floors, or rescues utilizing a wire basket from elevated or below-grade locations. The object is to achieve a standardized operation that emphasizes safety. Standardization lets members assigned to different units work together.

The entire evolution must be specific and documented. There should be a maximum amount of time to complete an evolution. Using time frames simulates the stress found at the incident scene. It also demands teamwork on the part of all members to ensure that the time frames will be met.

An excellent method to keep training interesting is to foster a competitive spirit among the various units. This can be accomplished by recording the time needed to complete each evolution and posting the individual times. Realize that speed alone should not be the determining factor. Safe operations and adhering to the entire performance standard must be judged. There should be methods to penalize units for minor mistakes or omissions.

Videotaping evolutions lets the officer note a unit's strengths and discover areas where improvement is needed. An excellent tool for the training division is to maintain tapes of the units performing the best times. This permits recognition of these outstanding accomplishments while allowing other units reviewing the tapes to take advantage of their experience.

In addition to the benefits gained by company members training on timed evolutions, a fire officer should make note of the amount of time required to perform these evolutions. This can help the officer when commanding a fire scene in assigning tactical operations. By knowing how long it takes to place a master stream device into operation under ideal conditions, the fire officer can utilize these established time frames while recognizing potential limitations.

CROSS-TRAINING

Fire departments should regularly schedule training involving multiple units. This should include the cross-training of members normally assigned to an engine on the operations of a main ladder or tower ladder, while ladder company members get the opportunity to

NIOSH FIREFIGHTER FATALITY REPORT F2009–06

On January 25, 2009, two male career firefighters, ages 28 and 45, died after falling from an elevated aerial platform during a training exercise in Texas. The firefighters were participating in the exercise to familiarize fire department personnel with a newly purchased 95-foot mid-mount aerial platform truck. A group of four firefighters was standing in the aerial platform that had been raised to the roof of an eight-story dormitory building at a local college. The platform became stuck on the concrete parapet wall at the top of the building. During attempts to free the platform, the top edge of the parapet wall gave way and the aerial ladder sprang back from the top of the building, and then began to whip violently back and forth. Two of the four firefighters standing in the platform were ejected from the platform by the motion. They fell approximately 83 feet to the ground and died from their injuries.

Key contributing factors identified in this investigation include the firefighters being unfamiliar with the controls on the newly purchased aerial platform truck, training in a "high risk" scenario before becoming familiar with new equipment, failure to use fall restraints, the design of the platform railing and integrated doors, and the location of the lifting eyes underneath the platform that contributed to the platform snagging on the building's parapet wall.

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FIGURE 1-9 Training should include hazardous materials teams. This exercise was conducted at the Philadelphia Veterans Administration Hospital and permitted Philadelphia firefighters assigned to the hazardous materials team to interact with hospital personnel. *Used with permission of Philadelphia VA Medical Center.*

operate the pumps on the engines. Cross-training should include members of specialized units, like a heavy rescue company. This hands-on training helps give members a better understanding of how the various units function, allowing an emergency scene to operate smoothly. Assigned members of a rapid intervention crew will then be able to utilize apparatus on the incident scene to assist in removing trapped firefighters.

Departments should routinely train with mutual-aid departments. These exercises enable members to form friendships and share experiences that will benefit each department when called upon to operate together on future incidents.

Preincident Planning

Knowledge is a tool. The more tools that we have at our disposal at an emergency scene the better the odds of a successful outcome. A well-informed Incident Commander can handle problems effectively, with fewer resources and less chance for error.

Similar to the way that life insurance companies invest their insured dollars and bet that their insured are not going to die, we in the fire service plan for a large fire that we hope will never occur.

preincident planning ■ Method of gathering facts about a building or process prior to an emergency.

Preincident planning provides information. It is a method of gathering facts about a building or a process within a building. It lets a fire department evaluate conditions and situations in its area of responsibility prior to an emergency. Through evaluation, we can compare what we may be called upon to do with what we can do. (Fire department staffing in some areas may not be capable of controlling a major fire due to limited personnel or equipment.) Fire departments that utilize preplanning find that it can mean the difference between success and failure at an emergency incident. Preincident planning allows us to anticipate potential problems and analyze possible solutions to those problems.

PREPLANNING RESPONSIBILITY

The responsibility for preplanning starts with the fire chief. Once a policy is established, all members of the fire department must carry it out.

A chief officer should be assigned as a coordinator to oversee the preincident planning programs. This person should have sufficient authority to ensure compliance by company and chief officers. By placing responsibility with one person, that individual can decide what is best for the program. This ensures standardization and continuity of all preplans. Should any questions arise, they can be directed to that individual, which results in consistency of forms, inspection methods, and record keeping. The chief officers who

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will be implementing the plan during an emergency must be involved in selecting which target hazards to preplan.

Target hazards for which preincident plans should be prepared include buildings or processes:

- That pose a high threat to life safety of those who work in the building or facility and to those who live nearby
- That would create safety problems for firefighters and other emergency responders (hazardous materials, buildings with lightweight building components, etc.)
- That could create a conflagration hazard
- That would present unusual and demanding situations for responding firefighters
- That have a high frequency of fires
- That would have a large economic impact on the community

Historical data enable us to select the most critical properties or specific problems in our community. The next step is gathering information to analyze the overall situation. The data should include both national and local statistics—what types of fires are common versus the types of buildings and occupancies found in our community. This analysis assists in determining potential problems. A plan of action can be developed based upon what may occur.

TYPICAL TARGET HAZARDS

Nursing Homes	Public Assemblies	Bulk Storage or Tank Farm Facilities
College Dormitories	Libraries and Museums	Large Buildings or Building Complexes
Penal Institutions	Courthouses	
Grain Elevators	Enclosed Malls	Chemical Plants
Schools	Major Transportation Carriers	High-Rise Buildings
Hospitals		

DOCUMENTATION

Preplanning is a tool that sets forth a framework for interfacing all fire protection components before an emergency occurs. It is a method of gathering facts and collating information. The preplanning process begins with an on-site survey.

The responsibility for gathering information for the preplan is usually assigned to the first-due engine or truck company. The crew should contact the building owner or responsible party and schedule a time to tour the facility. A thorough inspection can reveal locations where a problem may occur. It can identify the immediate life threat and actions that the fire department can initiate to mitigate the problem. This meeting can enable both parties to discuss concerns about problems that firefighters may encounter and how the fire department and facility can solve those problems together.

There are numerous ways of gathering and saving this valuable information. Yet there must be a method of easily recalling the stored information during an emergency, or the preplanning process will be useless.

The stored data:

- Can be very basic and kept on large index cards for easy reference. This will limit the amount of information, but the data will be easily accessible.
- Can be in a booklet consisting of multiple pages. This contains more comprehensive information, though it becomes more difficult to access due to the greater amount of data.

Resource Central

See Damage Assessment Forms for sample forms.

- Can be in a database that stores and retrieves information, including safety information that can be flagged and become immediately available by being printed out at the time of the alarm. The information can be sent automatically to the scene via on-board printers or facsimile machines. One drawback can be the cost of these systems.
- Can be in a palm-sized or handheld computer for quick and easy retrieval
- Can be a combination of an index card system that is backed up by a booklet

Initial concerns can be placed on the index cards to be easily accessed by the initial units. Comprehensive information can be gleaned from the booklet after the initial concerns have been addressed and more specific information is needed.

Quality is the important concern. An overwhelming amount of data can be counterproductive. It can take too long to sift through useless data before locating the needed information.

The booklet method can contain a section on fire department concerns. This can cover areas of general concern and specific areas that would pose a threat to firefighters. It may include:

- Building renovations that might not show on the original building plot plans
- The presence of pressure-reducing valves on standpipes
- Standpipe and sprinkler connections
- Any special extinguishing systems utilized within the building, such as dry chemical or CO_2
- The presence and location of hazardous materials in the building, such as asbestos, radioactive material, and PCBs
- Flammable or explosive processes
- The location of open shaftways or chases
- Special needs of occupants (disabled, infirm, etc.)
- Means of access, egress, and floor or plot plans

Phone numbers can change. Emergency contact personnel can change. Responders should review and update the information during site visits. Scheduling of multiple dates for site visitations can ensure that all members in career and volunteer departments will have the opportunity to visit the site for firsthand knowledge. The data should be incorporated into company drills to permit a constant refresher.

CONSIDERATIONS

We must thoroughly analyze each situation. How will we be able to protect building occupants and those in threatened exposures? What evacuation plans have been formulated? Are there other means by which occupants can be protected, such as lateral evacuation or protecting in place? Are there protective systems in the building?

Our on-site survey should consider how construction features and protective systems assist or impede the fire department once a fire occurs.

These include:

- Is the entire building equipped with automatic sprinklers? Is an engine company assigned to pressurize the system?
- Standpipes will aid firefighters in placing hose streams onto the fire. Is it a wet or dry system? Which fire department unit will pressurize the system?
- Compartmentation will assist in containment of a fire, permitting the fire department an opportunity to control and extinguish it. Do fire doors close automatically? Are they propped open?
- Wire-glass windows provide buildings with exterior exposure protection. They may crack from radiant heat but will remain in place. Are any exterior exposure protection systems in place?

- Smoke-proof doors and smoke-removal systems assist in reducing the spread of smoke and can help in minimizing evacuation problems in some facilities. Are these systems in place?
- How are lightweight building components protected?

Once the target hazards are identified, potential problems can be predicted and solutions to those problems can be formulated. These solutions can be addressed by developing standardized procedures for these recurring situations. The implementation of set procedures permits them to be practiced under nonemergency conditions. Firefighters' skills can be honed so that time will not be wasted at an emergency.

Another benefit derived from preplanning is that command decisions can be decided under nonemergency conditions. This reduces the stress on the Incident Commander during an emergency.

RESOURCE UTILIZATION

The preplan should consider the availability of resources. Many departments have a difficult time staffing apparatus at daytime hours during the week. Since there may be a delay in the response of personnel, the number of personnel that will be needed to perform specific functions must be established in the preplan. Alternative strategies must be formulated to anticipate reduced staffing.

Resource utilization includes securing the services of outside agencies, such as the police, Red Cross, private security, public works, public health, utilities, or federal, state, or local agencies. Their inclusion in the preplan should be specific about the duties expected of them. Police, for instance, can be used to evacuate an area if they are not placed in jeopardy. This assignment means one less headache for the fire department. A command police officer can be used when relocation of displaced people associated with an incident occurs. Though seemingly a minor point, delegation to another agency will save firefighting personnel for needed assignments.

An incident management system also must be developed and utilized, and it must be confirmed that all agencies are using the same system. A system will address the multitude of problems associated with large-scale incidents. Anticipating specific problems allows prior thought and research on the part of the individuals who may assume specific roles in the command system.

ON SCENE

A training exercise at a refinery involved a scenario in which a small aircraft from the nearby airport was simulated to strike a storage tank containing crude oil. The ensuing simulated fire went to two alarms and included training with the city fire department and the plant fire brigade. Surprisingly, within two weeks, a major fire occurred at that refinery. The knowledge learned from the drill was quickly placed into action and the fire brought under control in a timely manner. In addition to the information that was gained on the facility, a major benefit was the mutual respect that developed between the fire brigade and the fire department members.

DISASTER PLANNING

There are certain facilities where, should an emergency occur, there could be a direct impact on the immediate surrounding community. These include chemical plants, refineries, large water purification plants, and testing laboratories. These sites will require large-scale plans with multi-agency planning and community input. This type of plan must have the support of every agency involved for it to succeed. A member of each supporting

agency should be conferred with when drawing up the plan. This liaison should have the authority to authorize specific commitments of resources in the event of an emergency. The inclusion of participating agencies in the planning process allows them to buy into the plan. Success or failure is dependent upon them as well.

Community support should be sought. The immediate population around the site should be informed of evacuation plans and any prefire drills. This can be accomplished through independent community groups (church or senior citizen groups) or groups established to identify problems associated with a specific site. Some communities have established strong relationships with industrial plants and work diligently for the betterment of both the community and the plant.

The preplan can stipulate special equipment that can be used effectively at the scene. Mutual-aid response should be reviewed to allow proper deployment. A greater initial response may be indicated by the hazards presented, necessitating changing existing policies.

PLAN REVIEW

Review of the preplan with the personnel of the affected facility is a positive step. It may open their eyes to the distinct possibility of destruction of their facility. It could initiate major changes to prevent a disaster. This may include separating processes that would react unfavorably during an incident, installing sprinkler systems, or increasing the available water supply on the premises. During an emergency, these same individuals can be utilized as technical specialists who can assist the Incident Commander.

TESTING THE PLAN

Implementation of a preplan during a simulated exercise assists in adjusting the plan as needed.

- What worked well?
- What needs to be adjusted?
- What problems did the fire department encounter?
- If the community was involved in the exercise, did it have any problems?
- Did the plant or facility find any discrepancies in the plan?

ON SCENE

Successful Operation Due to Preplanning

There may be no better argument for a preplan than a major fire that occurred in Center City, Philadelphia. A six-story commercial building that encompassed a full city block was undergoing renovations. Missing stairways and open shafts when elevators were removed created vertical openings. Sprinklers and standpipes had been removed before being replaced.

The local engine company and battalion chief were concerned that many basic safety measures were not being complied with. They had responded to a few minor fires in the structure during the renovations, leading to a prefire plan being written and disseminated for the building during the renovation.

Within a month's time, the preplan was placed into operation. A fire occurred in the afternoon hours that went to seven alarms within eight minutes, and eventually nine alarms (that included over 50 apparatus) with full involvement of the six-story building within ten minutes. Located in an area of high building density, the prefire plan recognized existing building conditions. It designated positions of first-alarm companies and warned of the potential of a large-scale fire. This prior knowledge allowed the Incident Commander to calculate his situation and anticipate problems that could arise. It allowed for immediate commitment of master stream devices for a concentrated attack.

An independent study in reviewing this incident found that the preplan was a major factor in the fire department's ability to control this major fire. (At the time this fire occurred, code enforcement and the ability to have contractors cease operations were not controlled by the fire department. Today there is joint responsibility for cease operations between the fire department and the city's code enforcement bureau.)

The addition of contingency plans for foreseeable problems and their incorporation into the exercises should be encouraged. The plan should be reviewed annually to see if any modifications are needed.

Needed Fire Flow

A problem facing the initial Incident Commander at a fire scene is how much water will be needed for effective fire control. This information will impact the incident in terms of determining needed resources and the implementation of tactical operations.

Determining the amount of water needed to extinguish a fire in a specific building is best accomplished during the preplanning stage. This can be attained through a deliberate calculation of the occupancy, considering conditions when establishing the needed fire flow. When preplanned information is available to the initial Incident Commander upon arrival at an incident, strategic and tactical decisions can be made more readily and accurately.

To determine **needed fire flow** (NFF) during preplanning requires the application of a fire flow formula to conditions observed during an inspection of the premises. (See Figure 1-10)

needed fire flow ■ The theoretical amount of water needed to control and extinguish a fire.

On many occasions, fire incidents are encountered where fire flow information is not available. Under these circumstances, experienced fire officers are able to determine the needed fire flow based on their experience and knowledge of similar situations they have encountered in the past.

There are occasions when a newly appointed or relatively inexperienced officer lacking the expertise of a seasoned officer must quickly judge the amount of water needed to effectively control a fire. The National Fire Academy (NFA) in Emmitsburg, MD, has developed a formula that allows for quick calculations. The formula was derived through a study of fire flows that were successful in controlling a large number of working fires, along with interviews of numerous experienced fire officers throughout the country regarding the fire flows they have found to be effective in various fire situations. The NFA quick-calculation formula can be used as a tactical tool to provide a starting point for deciding the amount of water required at an incident scene. This will permit decisions to be made on the amount and type of apparatus needed to deliver the water and the number of firefighters that will be needed to apply it.

The information developed by the NFA indicated that the relationship between the area involved in the fire and the approximate amount of water required to effectively extinguish the fire can be established by dividing the square footage of the area of fire involvement by a factor of three. This formula is expressed as:

$$\text{Fire flow} = \text{length} \times \text{width} \div 3$$

60x20 / 3x1 = 400 GPM for 100% Involvement

FIGURE 1-10 To calculate fire flow for a single-family dwelling 60 feet long by 20 feet wide. *Used with permission of Michael DeLuca.*

This formula is most easily applied if the estimated square footage of the entire structure is used to determine an approximate fire flow for the total structure and is then reduced accordingly for various percentages of fire involvement.

The example shown below illustrates how the formula can be applied to a single-family dwelling 60 feet long by 20 feet wide and one story high:

$$60 \times 20 \div 3 \times 1 = 400 \text{ gallons per minute (gpm)}$$

$$100\% \text{ involvement} = 400 \text{ gpm}$$
$$50\% \text{ involvement} = 200 \text{ gpm}$$
$$25\% \text{ involvement} = 100 \text{ gpm}$$

The quick-calculation formula indicates that if the dwelling were fully involved, it would require 400 gpm to effectively control the fire. If only half of the building were burning, 200 gpm would suffice, and 100 gpm should be sufficient if one-fourth of the building were involved.

MULTISTORY STRUCTURES

In multistory buildings, if more than one floor in the building is involved in fire, the fire flow could be based on the area represented by the number of floors actually burning. For example, the fire flow for a two-story building of similar dimensions as the previous example would be:

$$60 \times 20 \div 3 \times 2 \text{ (floors)} = 800 \text{ gpm if fully involved}$$

If other floors in a building are not yet involved, but are threatened by possible extension of fire, they should be considered as interior exposures, and 25 percent of the required fire flow of the fire floor should be added for exposure protection for each exposed floor above the fire floor to a maximum of five interior exposures. (In the previous example, a fire on the first floor would threaten the second floor, and a 25 percent exposure charge should be added. A second-floor fire would probably not threaten the first floor, so no interior exposure would need to be calculated.)

EXTERIOR EXPOSURES

Likewise, if exterior structures are being exposed to fire from the original fire building, 25 percent of the actual required fire flow for the building on fire should be added to provide protection for each side of a building that has exterior exposures.

The following example shows how to apply calculations for exposures to our previous one-story dwelling with exposed exterior structures on two sides of the fire building:

$$60 \times 20 \div 3 \times 1 = 400 \text{ gpm}$$

$$2 \text{ exposures: } 400 \text{ gpm} \times (25\% \times 2) = 200 \text{ gpm}$$

Total fire flow required = 600 gpm (for 100% involvement of the original fire area)

If the exposure becomes involved in fire (either additional floors of a multistory building or adjacent structures), the exposure(s) should then be treated as a separate fire area and calculated separately, and then added to the required fire flow for the original fire area.

In using the quick-calculation method to determine required fire flows, it is important to remember that the answers provided by this formula are approximations of the water needed to control the fire. The formula is geared to an offensive attack, and its accuracy diminishes with fire involving over 50 percent of a structure and with defensive operations. Don't forget that you are estimating both the area of the building and the amount of fire involvement within the building.
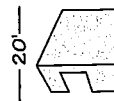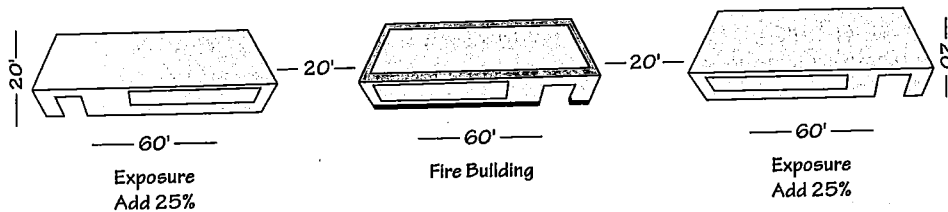
FIGURE 1-12 If exterior exposures are being threatened by fire from the original fire building, 25 percent of the actual required flow for the building on fire should be added to provide protection for each side of a building that has exposures. *Used with permission of Michael DeLuca.*

Since firefighting is not an exact science to begin with, the use of the quick-calculation formula cannot be expected to determine the exact gpm that will be specifically required for full fire control. It has been found that as the amount of involvement reaches a stage where a defensive attack is necessary, the needed fire flow will be found to be slightly greater than predicted. (See Figures 1-11 and 1-12)

AVAILABLE WATER SUPPLY

Available water flow must be known. The type and location of the water supplies should be specified. Provide exact locations if using hydrants or drafting sites. If a tanker/tender operation is to be used, determine how many will be needed to ensure a constant water supply.

DETERMINING TYPE OF ATTACK

Once the required fire flow has been determined, the capability of available resources will determine the strategy and tactics needed to control the incident. If the fire flow capability of available resources exceeds the required fire flow, an interior attack on the fire can usually be made. However, before this decision is implemented, the Incident Commander should consider:

- Do existing conditions allow sufficient safety for the firefighters on an interior attack?
- Are there sufficient firefighters on scene?
- Is the fire area accessible?
- How many hose-lines and firefighters are needed?

FIGURE 1-13 A flammable liquid fire in an auto garage heavily involves the building and vehicles. A quick search will be required to ensure that all occupants have evacuated the building. *Used with permission of Brian Feeney*
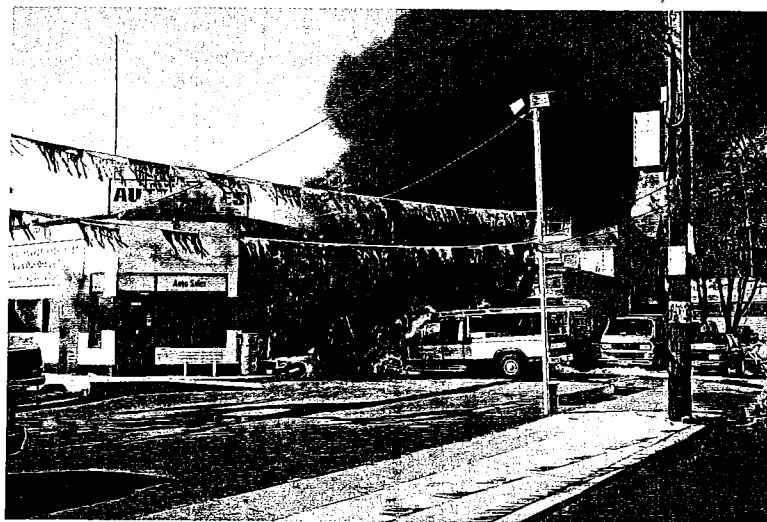
- Where is the best location from which to attack the fire?
- What support activities are needed (ventilation, forcible entry, search and rescue, accountability, rapid intervention crew)?

If the fire flow requirements exceed the fire flow capability of available resources, a defensive mode of operation is usually required. In these situations, larger hose streams, more apparatus, more equipment, and more personnel may have to be requested. Situations will occur where fire is attacking lightweight structural components, and though there is a sufficient water supply and resources, the conditions will be too dangerous for an offensive attack. The Incident Commander must also recognize that there will be situations where nothing can be done with the available resources to save the involved building. In these circumstances, exposure protection becomes the primary objective.

SELECTION OF HOSE-LINE

Recognizing that a 1½-inch or 1¾-inch hose-line flows 125–175 gpm and a 2½-inch hose-line flows approximately 250 gpm, we can estimate the number of hose-lines and resources needed to control the fire.

While the needed fire flow formula (fire flow = length × width ÷ 3) will provide the Incident Commander with a starting point to determine how much water may be needed for an effective fire attack in normal situations, common sense and good judgment are required to evaluate the effect of the water on the fire as it is being applied. There may be unforeseen factors impacting the situation, such as barriers that prevent the water from reaching the seat of the fire or building contents that cause unexpected fire behavior.

If control is not achieved within a reasonable period of time, the amount of water may have to be increased or a defensive attack may need to be implemented. If immediate knockdown of the fire takes place, the amount of water being applied can be reduced to minimize water damage to the structure and contents.

The Fire Officer

COMPANY OFFICER

The company officers are among the most critical members of a fire department. They may be selected by a civil service test, appointed by the fire chief, or elected by the members. The responsibility is the same regardless of the method of promotion or whether they serve a career or volunteer department. The company officer is the direct link for the firefighters

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between middle and executive management, and he or she must maintain a critical balance between them. Officers must accomplish the goals of the department while looking out for the well-being of their firefighters. This can often be a demanding challenge.

A company officer has to get work accomplished through others. This may be achieved in different ways. Whether an officer is an authoritative or congenial type is usually determined by his or her personality. The style is not as important as the fact that there must be consistency. Inconsistency occurs when attempting to be a hard-line type of officer one day and overly friendly another day. This change in style will lead to frustration on the part of the firefighters. It is better to find a style that suits you and be consistent.

> The strength of every fire department is the company officer.

Company Leader   Firefighters look to the company officer as their leader. Good leaders lead by example and gain the respect of subordinates and superiors alike. Those who need to rely on the adage "do as I say, not as I do" will have a more difficult time getting their orders carried out than the officer who leads by example. By sharing personal fire and emergency response experience with the members, the officer allows them to grow within their department and prepares them for promotion.

Respect and admiration is gained through many individual qualities. Company officers must have the ability to adapt to changing situations, be quick thinking, and have good communication skills. They must remain calm in critical situations, frame orders clearly and concisely, and give, not yell, the orders. This will foster teamwork and cooperation.

They should seek a variety of ways to achieve personal development. This can include seminars, training, and especially pursuit of educational degrees in fire science, management, and public safety fields.

Common Sense   A trait that some people seem to be born with is common sense. It can also be developed if one works at it. We must think before we act. If we allow ourselves to think of how to handle a situation rather than rush right in, we can decide on the best possible approach. At an incident scene, time is at a premium and decisions must be forthcoming. This time may consist of only seconds, but some thought is often the difference between a good and a bad decision. Quick decisions that are not thought out can become faulty decisions. Take the time to "Stop, Step Back, and Think" before acting. Good decisions are often associated with common sense.

People Skills   The successful company officer is one with people skills. By studying each subordinate, he or she can determine how to bring out the best in each of them. What are their strong points? What areas need to be strengthened? The key ingredient is motivation. They must be personally motivated. A key to motivation is finding out what drives each individual. For some, it will be how they benefit personally. For others, it is praise for a job well done or a pay incentive. The company officer must find these methods of motivation to assist in molding the firefighter as an individual and as a team member.

Company officers can be successful if they praise their firefighters' good behavior publicly and criticize their mistakes privately. When reviewing a misdeed with a firefighter, the discussion must focus on the mistake that was made and not become a discussion of personalities. This type of strong supervision creates a positive work environment.

Knowledge of District The officer should do a risk analysis of the unit's response district/community. This will assist in gaining personal knowledge on specific problems. It might include locations where a long response is necessitated due to the presence of limited access highways, railroad crossings that may slow response time, and/or occupancies (e.g., hospitals, schools, nursing homes, etc.) that will demand a maximum effort by the responding firefighters. Special attention should be given to all target hazards, and their preplans should be reviewed at the scene when performing building inspections. Officers should draw upon the experience of their firefighters. Previous responses to these locations can provide invaluable information. This sharing of information can be initiated at the scene. A good officer will take notes and continue the discussion after returning to the station. Information should be gathered on what support may be expected from plant personnel and the types of fires these installations have had in the past. It should include the positive things that occurred, as well as the problems that arose and how they were overcome. This review not only allows the officer to build a base of knowledge but enables the other firefighters to learn as well.

Teamwork Chief officers don't extinguish fires. Chiefs develop the basic strategy. The fulfillment of the orders to achieve the chief's strategy is the responsibility of the company officers and firefighters. These members must have the courage and fortitude to accomplish the needed objectives. Success occurs from a total team effort. The firefighter operating the nozzle may actually extinguish the fire, but he or she is only one key player in a company or combined unit operation. The company officer must direct the unit and give assignments to assure success. From the size and type of hose-line, the source of water supply, and how and from where to attack the fire, he or she must be sure to define roles and responsibility. Coordination with other units ensures a balanced attack.

The company officers' duties on an emergency can cover a wide spectrum. Initially, they may be called upon to perform the role of Incident Commander. Upon being relieved, they may be assigned to supervise a division or group or return to their company. In the incident's final stages, they may revert to Incident Commander to complete the overhauling stage of the incident.

The Incident Commander or Division or Group Supervisor assigns tactics that need to be accomplished. The company officer assigns tasks to his or her members to achieve those goals while keeping the Incident Commander apprised of the progress being made.
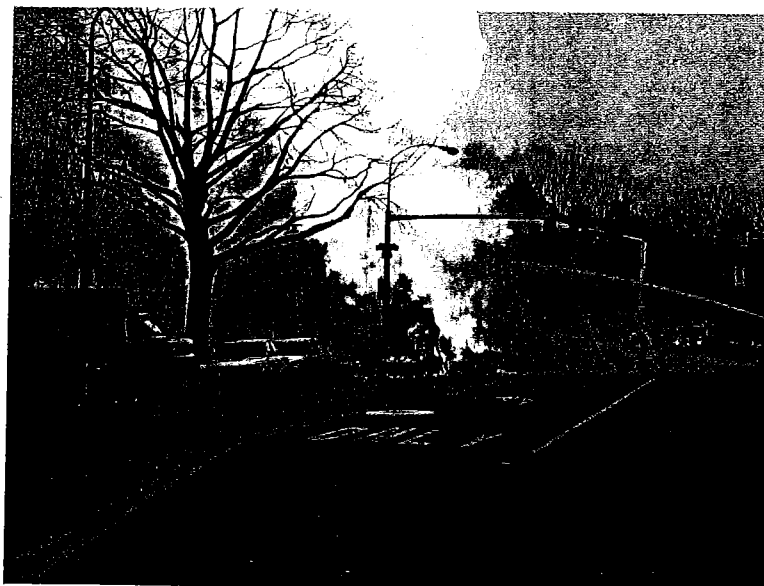

FIGURE 1-14 A high-pressure natural gas main was broken by a worker who was operating a backhoe. It threatened numerous exposed buildings and destroyed nearby vehicles.

Training The competence of officers is most often judged by their ability to command a company. Under their guidance, firefighters train and practice to be ready when called to a fire or other emergency scene. Training is the backbone of every good organization. How well we practice dictates how well we will perform at an emergency. The more we train, the better we become.

Through the use of standard operating procedures or standard operating guidelines, we have the ability to practice the performance of routine tasks that can then be applied at the incident scene.

Riding Assignments Another tool many departments utilize is riding assignments. This means assigning tools and basic tasks to firefighters. Career departments assign these duties at the start of each shift. Some volunteer departments have assignments established by the apparatus seat position. The seats are numbered and specific duties are assigned to the firefighter riding in each seat. This allows the officer to give a general order and reserve time for the vital decisions that are sure to crop up at an incident.

Responsibility The company officer is responsible for many areas. These include training, physical fitness, and mental readiness of the entire crew. There should be an esprit de corps among the members that will drive the firefighters to want to do the best that they can. This is an attitude that must be exhibited by the officer, and it will become contagious for all members.

The company officer determines the route and regulates the speed of the apparatus on an emergency response. All crew members should have their personal protective equipment on and be seated with seat belt secured before the apparatus leaves the station. The officer should be cognizant of intersections where they may meet other responding units. On arrival at the scene, the company officer will direct the positioning of the apparatus, considering the functions that will need to be accomplished. (See Figure 1-15)
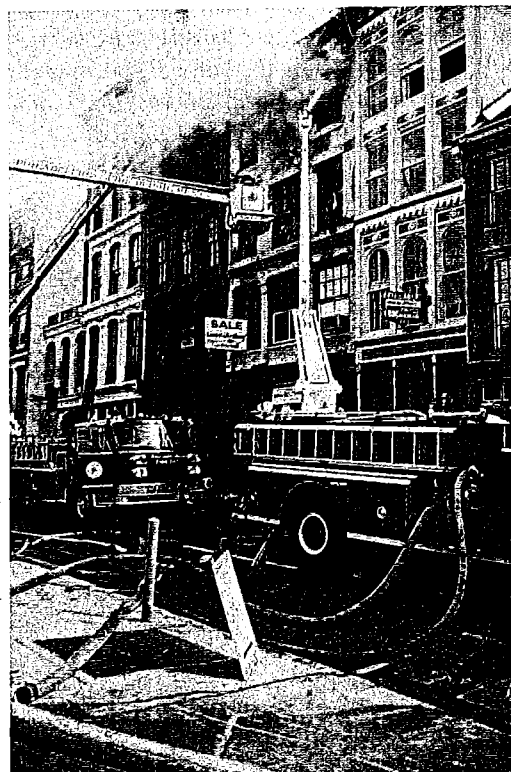

FIGURE 1-15 The company officer will direct the positioning of the apparatus, considering the functions that will need to be accomplished. *Used with permission of Joseph Hoffman.*

The company officer on arriving at the incident scene must size-up the structure. In addition to life-safety factors, this observation must include anything out of the ordinary. Are doors or windows open? Where is the fire on arrival? Is there more than one fire? Because officers are responsible for initial fire investigations as to the cause of fire, this point will assist them and the fire marshal, fire investigator, or police agency in completing their investigations. (Chapter 3 covers size-up.)

Realizing that size-up is the duty of each member operating at the scene, the officer's thought process should be geared to predicting areas where pitfalls could endanger company members. Observations must include "reading a building" prior to entering to consider secondary means of egress. By sharing this information quickly with the firefighters, they can react promptly if they need to utilize a secondary exit.

Teamwork is enhanced by communication between the company officer and the firefighters and with other company officers. The sharing of information facilitates the accomplishment of assignments and prevents duplication of effort. It may entail the size of ladders needed in the rear of a structure, where ventilation is required, or in which areas a primary search has already been completed.

> Size-up and safety are everyone's responsibility.

Safety Safety is one of the most important responsibilities of a company officer. Incident scene safety doesn't just happen; it must be anticipated and addressed in training sessions. The implementation of safety in practice evolutions will carry over to the emergency scene. Cultivation of good work habits in routine situations develops into good incident scene practices. The company officer must ensure that everyone is wearing full protective clothing when operating at an incident. Inspecting the firefighters' personal protective equipment at regular intervals will uncover any deficiencies. Follow-up is needed to ensure that defective gear is repaired or replaced.

THE CHIEF OFFICER

The chief officer is the leader of a fire department. The position of chief can encompass a variety of ranks: battalion, district, division, deputy, assistant, and chief of department. The titles and duties will vary in day-to-day operations, but there is little difference when operating at an incident scene. At an incident, the duties of an Incident Commander must be all-encompassing, regardless of titles.

There is a difference between a chief and a company officer. A company officer is part of an engine or truck company. Firefighters will confide in company officers to ask questions or seek advice. The rank of chief is the next step on the promotional ladder after company officer. The experience learned as a company officer will be the foundation that chief officers can build upon. A chief must assume responsibility for management and leadership in the department. He or she should lead by example, by making the difficult decisions, not necessarily the most popular ones. The orders given must be based upon what is best for the community and the department as a whole. There should be no inclination toward favoritism to any one person or group. This is a balance that must be maintained to be an effective leader.

Personal Development The chief officer must be personally motivated and build on the skills learned as a firefighter and company officer. Too many fire departments do

little training after members reach the chief officer ranks. Chief officers must continue to expand their knowledge. They must obtain information through academia, training, and at incident scenes. Their knowledge base must include an understanding of fire science, incident scene management, safety, building construction, hazardous materials, supervisory skills, time management, delegation of tasks, and many other areas too numerous to mention.

Knowledge Knowledge of fire science and building construction is fundamental for firefighters. The firefighter needs to recognize how building construction features can affect fire travel through a structure, the proper handling of hose-lines, and how to effect ventilation to achieve control and extinguishment of a fire. These areas will need to be expanded as one is promoted to company officer and again to chief officer.

A company officer must build upon that knowledge to order the proper size and number of hose-lines and their placement and to understand the duties required of a truck or heavy rescue company in placing ladders or assigning search and rescue crews. Company officers must recognize what additional functions will be required. They will direct operations while coordinating and supervising a division or a group.

The chief officer will assess the scene and assign the necessary units to accomplish the strategies developed. They must continuously size-up the incident and ensure that the orders given will accomplish the needed tasks. The chief's knowledge of fire science, strategy, tactics, and construction is important to predict fire spread. The chief's assessment must determine whether the size of the fire and the type of construction will permit the fire to be controlled while predicting what additional problems could occur. (See Figure 1-16)

Management Before being able to manage others, chiefs must control and manage themselves. What do we need to accomplish? A positive way of stating our mission is "to get the job done." But it must be done the right way for both the fire department and for the firefighters who will be doing the job. Since there are many individual personalities that come into play, it is impossible to be specific on how to accomplish this task. Many chief officers just give the orders, and they are carried out. However, if the tasks are not getting done or not getting done properly, the chief must find out where the breakdown is. It could be in the way the orders are given. It could be the inexperience of the company officer that was given the assignment. A critical factor causing breakdowns
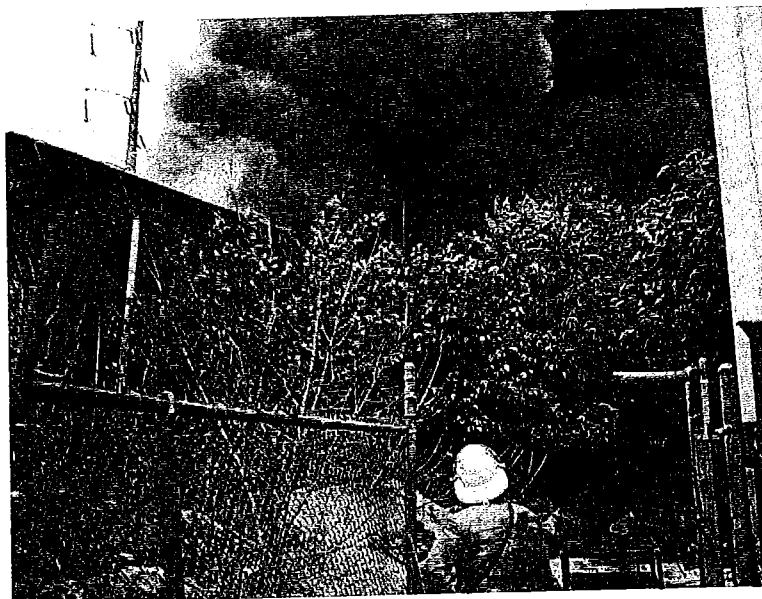

FIGURE 1-16 A chief officer surveys the rear of a fire building before assuming command. *Used with permission of Joseph Hoffman.*

is poor communication. The importance of framing orders properly may not be serious in nonemergency situations but critical at an incident scene. There are many methods of ensuring that orders are understood. One way is to have the person receiving the order repeat it to ensure it was properly received.

Delegation   Chief officers who fail to manage their own time will be ineffective. Chief officers who refuse to delegate assignments to subordinates will find themselves overwhelmed with minor details and totally ineffective in emergency and nonemergency situations. Delegation is a major part of leadership. Trying to do everything alone is a recipe for failure. However, delegation is a tool that should be used for development, not as a method of avoiding work. Delegation permits subordinates to assume responsibility and to make decisions. It permits a supervisor to assess the skills of subordinates and can lead to suggestions on how they can improve. It is a necessary training process whereby company officers can learn the duties and responsibilities of the chief officer. Naturally, every decision made during this learning process will not be perfect, but by learning from their mistakes, subordinates will gain valuable experience.

An excellent method for a company officer to learn decision making at emergency incidents is with oversight from a chief officer. Should an unsound decision be considered, the chief can interject and ensure that it is corrected. This monitoring permits the sharing of knowledge between the chief and company officer. The experience of the chief can be invaluable and can be utilized by the company officer at future incident scenes.

Incident Scene   What is expected of a chief officer at an incident scene? This question can have many answers.

- Leadership
- Direction
- Safe operating procedures
- Problem solving
- Common sense
- Unity of command
- Teamwork
- Dependability
- Initiative
- A positive attitude
- Enthusiasm
- Ability to adapt to changing situations
- Professional conduct

At an incident, the chief, after surveying the scene by doing a 360-degree walk-around, should establish a position in front of the fire building from which to command the incident. One of the more difficult aspects of promotion to the chief officer's rank is that the chief must allow the firefighters and fire officers to perform their jobs without interfering. There is a tendency by some newly promoted chiefs after assuming command to continue operating at an incident in ways that they are familiar with, that is, being inside and assisting with the actual fire extinguishment. They must resist the urge to operate within the fire building to get a "hands-on feel" for the incident. This is a natural desire since firefighters learned the profession by doing, not observing. Initially, this will feel awkward, but through experience, a comfort level will be reached. The chief officer must rely on the company officer to be his or her eyes and ears. The progression to chief means depending upon others not only to accomplish the fire suppression but to report the actions being taken and the progress being made. The interaction between the chief and the company officers may take some time to develop. Mistakes will occur in underestimating or overestimating the size of problems by the company officers operating on

the interior. This is a learning process. The chief must interpret the verbal reports received and compare them to what is observed. This comparison will allow the chief to decide if satisfactory progress is being made, and it will become the basis for future orders. The chief must let it be known what is expected of the company officer. The areas that should be discussed include basic operations for engine or truck companies and the information the chief requires on arrival from the initial Incident Commander. Postincident analyses and informal discussions can help to rectify any problems that occurred. These discussions will improve future operations. Remember, it is the responsibility of the chief officer to train fire officers and to assume the blame for their mistakes.

Sectoring As a fire increases in size or complexity, higher-ranking chief officers will respond and often assume command of the fire. This will permit other chief officers to be assigned to supervise various divisions or groups. (See Figure 1-17) (My personal objective at an incident is to place chief officers in the most critical areas. I rely heavily upon their experience and strongly consider their recommendations.)

Safety Considerations Command decisions must be based upon what is encountered at an incident. The safety of everyone operating at an emergency is an awesome responsibility. The chief must ensure that no one takes unnecessary chances that would endanger themselves or others while attempting to control or extinguish a fire. There can be a fine line between what is acceptable and what presents too much of a risk to the firefighters. If in doubt, we must err on the side of safety.

Specialization Chiefs need an intricate knowledge of the implementation of a command system to handle the large variety of problems that could occur. They need to understand what can be accomplished with the various apparatus, tools, and equipment at their disposal. Though the chief does not need to know all the idiosyncrasies involved, it is helpful to know the limitations of apparatus and equipment.

With the proliferation of hazardous materials, the threat of terrorism, and other special operations, there will be many demands on the chief at these incidents. The chief officer assuming the role of Incident Commander must delegate the actual handling of specialized areas of an incident to others. This could include a hazardous materials group. Realize that the Incident Commander still retains control and overall responsibility for the incident scene.

FIGURE 1-17 The Incident Commander can assign chief officers to supervise various divisions or groups. *Used with permission of Marty Griffin.*

Command Presence

The ability to command an incident scene takes preparation and development on the part of the Incident Commander. It is a demanding, autocratic position. The critical nature of the emergency scene does not allow decisions to be made by a committee. There can be only one person in command.

How commanders conduct themselves will influence the conduct of all operating at the incident scene. Leaders who exhibit confidence in themselves will gain the confidence of their subordinates. This characteristic can be referred to as **command presence** or command leadership. The need for command presence is magnified at emergency scenes. High-stress situations demand it. Time constraints placed on the Incident Commander in life-or-death situations require orders to be specific and forthright. When arriving at the incident scene, time cannot be wasted if people are in need of rescue. Immediate action is required.

command presence ■ The traits an Incident Commander exhibits, which will influence the conduct of everyone operating at an incident scene.

SELF-DISCIPLINE

Similar to firefighting skills, command presence must be developed. Though easily recognized, it can be difficult to attain. Leadership starts with the ability to possess self-discipline. Before leaders can attempt to control others, they must have control over themselves. They should be "take-charge" types who can recognize potential incident problems and concentrate on the task of controlling the emergency. A good leader knows what needs to be accomplished and gives deliberate orders that are easily understood. When indecisive orders are issued, they leave doubt in the minds of those on the receiving end and can lead subordinates to question their validity. For this reason, it is important to be precise, deliberate, and decisive.

Leaders will gain the respect of their peers more easily if they have the ability to remain calm. Composure is contagious and will result in a professional operation. Prior to the use of radios, command officers often had to shout to communicate orders. Handheld radios now allow a much better exchange of information. The officer who consistently shouts at an incident scene is frowned upon. Shouting itself denotes a sudden emergency that demands immediate action or it denotes an unsolvable problem. Shouting creates unnecessary excitement that can be contagious and lead to poor decision making and a chaotic incident scene.

VISUALIZE INCIDENT SCENES

Command leadership ability can be tested quite easily. Mentally place yourself in various locations: a single-family dwelling, a manufacturing plant, or a 10-story apartment building. Envision a fire in any one of these structures at 2 P.M. or 2 A.M.

■ What strategy and tactics would be necessary in each situation?
■ What resources would be needed?
■ Where would the resources come from?
■ What are the safety considerations for our personnel?
■ How would personnel be assigned?
■ What would need to be accomplished first?
■ How would rescues be made?
■ How should the incident management system be implemented?

If we visualize various scenarios and then go over how we would handle the problems that might arise, it enables us to preplan our command moves. As with a building preplan, the more planning we undertake, the fewer critical decisions will have to be made at the emergency scene. Visualizing scenarios allows us to prepare for the eventuality of certain occurrences. It lessens the surprises and allows the Incident Commander more time for other decisions.

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FIGURE 1-18 Though a portion of this dwelling was heavily involved in fire, proper deployment of personnel protected the larger section of the building.

UTILIZING EXPERIENCE

We can gain experience from previous responses. We must draw on what has worked well in similar situations in the past and project what resources and time frames will be needed to implement the strategy. Experience allows insight as to whether the tactics employed will achieve the strategic goals. Is the attack on the fire accomplishing what was intended? If not, then how must we adjust the strategy? (See Figure 1-19)

FIGURE 1-19 Experience allows insight into whether the tactics employed will achieve the strategic goals. *Used with permission of Joseph Hoffman.*

FIGURE 1-20 Realistic
exercises enhance the
training process.
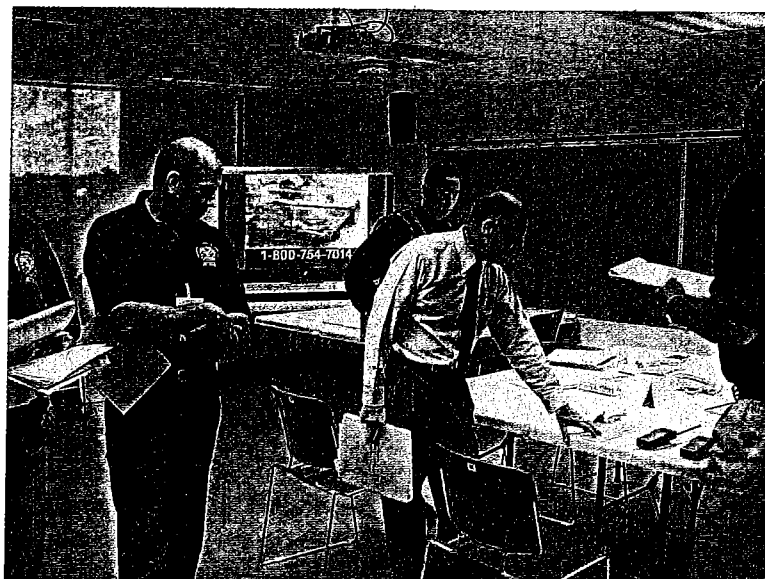
Time factors must be considered when dealing with specific kinds of incidents. A hazardous materials incident may involve a relatively short exposure for firefighters but can result in long-term disabling complications. Situations may also arise when insufficient personnel are available for incident control. Physical abilities and stamina have their limits. Attempting to accomplish too many tasks with insufficient personnel will often fail to achieve the desired goals. A fire officer must consider the safety of the members when making decisions. Firefighters who realize they are a prime consideration of the Incident Commander in his or her decision-making process will often give that extra effort to ensure success of their assignments.

THE LEARNING PROCESS

The saying "We don't live long enough to make all the mistakes ourselves, so learn from the mistakes of others" is most appropriate for the fire service. In addition to knowledge gained through experience, the studying of texts, fire journals, and case studies are methods that can significantly broaden our knowledge. (See Figure 1-20) The lessons learned from an incident in another jurisdiction are just as helpful in enabling us to prepare for a similar occurrence in our area.

The career development of a fire officer must encompass the basic aspects of everyday organizational rules. This includes an appropriate span of control to keep from being overwhelmed and to allow proper control of the incident. The delegation of authority will ensure that areas are not overlooked and reserve sufficient time for important decisions that must be made by the Incident Commander.

Firefighter Life Safety Initiatives

Firefighter safety must be an attitude in every fire department. It needs to be stressed in every aspect of fire department operations: training, station activities, and especially at the incident scene. The attitude of safety must initiate at the fire chief's level and be fully understood and enforced at all ranks. It must be realized that unsafe acts are not acceptable and will not be tolerated. From everyday basic acts of ensuring that all members are seated and belted-in before an apparatus can move to performing air monitoring prior to removing SCBAs at an incident scene, these must become routines that are never violated. Firefighter life safety also means keeping oneself in good physical condition so that

firefighters will be able to perform when called upon. In an attempt to reduce firefighter deaths and bring about change in the fire service, the National Fallen Firefighters Foundation decided to take drastic steps and find ways to accomplish that goal.

On March 10–11, 2004, the First National Firefighter Life Safety Summit was held in Tampa, Florida. It was attended by more than 200 individuals representing every identifiable segment of the American fire service who participated in the process. Their focus was on how to prevent line-of-duty firefighter deaths. With approximately 100 firefighter line-of-duty deaths a year they realized that changes were needed.

The National Fallen Firefighters Foundation hosted the Summit as the first step in a major campaign. In cooperation with the United States Fire Administration, the Foundation has established the objectives of reducing the fatality rate by 25% within five years and by 50% within ten years. The purpose of the Summit was to produce an agenda of initiatives that must be addressed to reach those milestones and to gain the commitment of the fire service leadership to support and work toward their accomplishment.

The Summit marks a significant milestone: it is the first time that a major gathering has been organized to unite all segments of the fire service behind this common goal. It provided an opportunity for all of the participants to focus on the problems, jointly identify the most important issues, agree upon a set of key initiatives, and develop the commitments and coalitions that are essential to move forward with their implementation.

The First National Firefighter Life Safety Summit produced 16 major initiatives that will give the fire service a blueprint for making changes.

On March 3–4, 2007, fire service leadership gathered for the 2007 National Firefighter Life Safety Summit in Novato, California. The 2007 Summit was developed and delivered under the aegis of the National Fallen Firefighters Foundation (NFFF) and the **Firefighter Life Safety Initiatives** program (FLSI). Their aim was to persist in developing solutions to the continuing problem of firefighter line-of-duty deaths, and by extension, firefighter line-of-duty injuries. At the Summit's conclusion, the participants proffered over one hundred recommendations. These recommendations will become the material

firefighter life safety initiatives ■ The First National Firefighter Life Safety Summit produced 16 major initiatives that will give the fire service a blueprint for making positive changes.

FIREFIGHTER LIFE SAFETY INITIATIVES

1. Define and advocate the need for a cultural change within the fire service relating to safety, incorporating leadership, management, supervision, accountability and personal responsibility.
2. Enhance the personal and organizational accountability for health and safety throughout the fire service.
3. Focus greater attention on the integration of risk management with incident management at all levels, including strategic, tactical, and planning responsibilities.
4. Empower all firefighters to stop unsafe practices.
5. Develop and implement national standards for training, qualifications, and certification (including regular recertification) that are equally applicable to all firefighters, based on the duties they are expected to perform.
6. Develop and implement national medical and physical fitness standards that are equally applicable to all firefighters, based on the duties they are expected to perform.
7. Create a national research agenda and data collection system that relate to the initiatives.
8. Utilize available technology wherever it can produce higher levels of health and safety.
9. Thoroughly investigate all firefighter fatalities, injuries, and near misses.
10. Ensure that grant programs support the implementation of safe practices and/or mandate safe practices as an eligibility requirement.
11. Develop and champion national standards for emergency response policies and procedures.
12. Develop and champion national protocols for response to violent incidents.
13. Provide firefighters and their family access to counseling and psychological support.
14. Provide public education more resources and champion it as a critical fire and life safety program.
15. Strengthen advocacy for the enforcement of codes and the installation of home fire sprinklers.
16. Make safety a primary consideration in the design of apparatus and equipment.

from which action plans for preventing line-of-duty deaths will be constructed and made available to all fire departments.

Following the goals of the United States Fire Administration to reduce line-of-duty firefighter fatalities by 50% by the year 2014, the National Fallen Firefighters Foundation, partnering with fire organizations and fire service leaders from around the United States, has created pathways and programs to prevent line-of duty firefighter deaths and, by extension, serious injuries. These are the "Everyone Goes. Home Program" and the "16 Firefighter Life Safety Initiatives," created from the first National Firefighter Life Safety Summit in 2004, and six subsequent mini-summits held between 2004 and 2007 (reports from the first National Summit and the mini-summits are available at www .everyonegoeshome.com).

For the 16 Life Safety Firefighter Initiatives to work they must be adopted and implemented by fire departments.

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Summary

Understanding the behavior of fire and the different classes of fires will assist firefighters in their attempt to handle an incident scene. Further knowledge of how a fire spreads and through what mediums can help in forecasting strategies, tactics, and tasks. Knowing the stages of fire growth and the potential conditions of rollover, flashover, and backdraft will aid in incident scene safety.

Remember the six Ps: "Proper Prior Planning Prevents Poor Performance."

Prior knowledge is the foundation for information that a well-informed Incident Commander can utilize for handling specific problems. The knowledge of the amount of fire flow needed is a tool. As more data become available, they can be added to the preplanned information. The better the planning, the more professionally the scene will be managed. The more decisions made in the preplanning stages the fewer that have to be made at the emergency.

If we don't plan for emergencies, we cannot deal with them effectively. Preplanning allows a fire department to be forewarned; to be forewarned is to be prepared. Once problems are identified, the way has been paved for successful emergency operations.

Aspiring firefighters looking to future advancement have a lot of work ahead of them. A firefighter desiring a position of command will need to do a great deal of studying and personal development. Remember, a promotion alone does not ensure leadership and command presence traits. They are acquired through hard work, persistence, and perseverance.

Though we do not usually associate the position of leader with "guts," mettle is certainly needed to properly handle some of the tasks that come our way. There are times when we have to make unpopular decisions. They may come in the form of countermanding a previous order given by a subcommand or changing a fireground strategy to bring a situation under control.

We can learn from our mistakes as well as build on our successes. We must realize that what has worked in the past will probably continue to work in the future. Since the methods used to accomplish assignments vary, the company officer is responsible for the readiness of his or her company as a unit and for the members individually. Successful fire departments are those with a strong core of company officers. Likewise, chief officers are the leaders. Their actions will reflect strongly on their fire departments. A successful fire department needs strong leaders at all levels.

The 16 life safety initiatives must be adopted and enforced by all fire departments. Only through a combined effort can firefighter injuries and deaths be reduced. Ignoring these safety areas will directly impact brother and sister firefighters and their family.

Review Questions

1. What is the fire tetrahedron?
2. What are the five classes of fires? Define each class and describe the symbol, its coloring, and alphabetical letter that depicts each class.
3. What are the methods of heat transfer?
4. List the five stages of fire.
5. Define rollover, flashover, and backdraft.
6. What various types of training are used in your fire department?
7. Who benefits the most from training—the firefighter, the officer, or the fire department? Explain.
8. Discuss the different types of preplans and decide which type would be most effective in your department.
9. In your department, what buildings' preplans should include needed fire flow, or should all buildings that are preplanned have this information? Explain.
10. In your department, what are the requirements for becoming a company officer? Chief officer?
11. Do the requirements for becoming both company and chief officer accomplish the needed goals in your department? Why? Why not?

12. What traits do you recognize in effective fire officers? List them.
13. Who is the best fire officer you have served under? Why?
14. How does your department assign tools and fireground responsibilities prior to arrival on the incident scene? Is this method effective or could another method be more effective? Explain.

15. What is the goal of the 16 life safety initiatives?
16. Select two of the life safety initiatives and explain how your fire department has implemented them. If you are not a fire department member then summarize how in your estimation two of these initiatives could be implemented.

Suggested Readings, References, or Standards for Additional Information

United States Fire Administration (USFA)

Routley, J. Gordon, "The Value of PreIncidence Planning for Effective Emergency Management," Technical Report 051.

Routley, J. Gordon, "Three Firefighter Fatalities in Training Exercise," Technical Report 015.

National Fire Protection Agency (NFPA)

Standard 1041: Standard for Fire Service Instructor Professional Qualifications.

Standard 1035: Standard for Professional Qualifications for Public Fire and Life Safety Educator.

Standard 1021: Standard for Fire Officer Professional Qualifications.

Standard 1002: Standard on Fire Apparatus Driver/Operator Professional Qualifications.

Standard 1001: Standard for Fire Fighter Professional Qualifications.

Standard 1000: Standard for Fire Service Professional Qualifications Accreditation and Certification Systems.

Related Courses Presented by the National Fire Academy, Emmitsburg, MD

Fire Dynamics—Fire Modeling
Training Operations in Small Fire Departments
Leadership II: Strategies for Personal Success
Leadership III: Strategies for Supervisory Success
Executive Development
Executive Leadership
Leadership and Administration
Executive Planning
Strategic Analysis of Fire Prevention Programs
Training Program Management
Challenges for Local Training Officers

Related Courses Presented by the Emergency Management Institute, Emmitsburg, MD

Management and Supervision of Training
Course Development
Instructional Delivery

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CHAPTER 2

Management Tools

❝ It is not the critic who counts: not the man who points out how the strong man stumbled or where the doers of deeds could have done them better. The credit belongs to the man who is actually in the arena, whose face is marred by dust and sweat and blood, who strives valiantly . . . who, at the worst, if he fails, at least fails while daring greatly, so that his place shall never be with those cold and timid souls who knew neither victory nor defeat. ❞

—President Theodore Roosevelt

A command post will benefit the Incident Commander and outside agencies at the incident. *Used with permission of Joseph Hoffman.*

KEY TERMS

incident commander, *p. 45*
incident scene control, *p. 68*

incident scene management, *p. 36*
status reports, *p. 72*

U.S. Department of Homeland Security, *p. 41*

OBJECTIVES

Upon completion of this chapter, the reader should be able to:

- Understand the origin of the Incident Command System.
- Understand the implementation of the National Incident Management System.
- Understand the positions of an incident management system.
- Discuss the position of Command.
- Know the different types of status reports and the information required in each type of report.

Resource Central

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Command and control is necessary at an emergency scene if the problems found are to be mitigated. Organization requires the implementation of an incident management system. Chapter 2 discusses positions found in an incident management system. It also discusses implementation of the command position at an incident.

This section looks at the need for and types of status reports that are necessary at an incident scene and the information needed in the various types of status reports.

Incident Scene Management

The variety of emergencies that confront firefighters daily demands that fire departments have and use an incident command system for **incident scene management**. The incident command system (ICS) was developed as a consequence of fires that consumed large portions of wildland areas and structures in southern California in 1970. These multi-jurisdictional disasters were the impetus for the development of a new incident management system (IMS) known as ICS. ICS is the result of a federally funded project called FIRESCOPE. This group consisted of federal and state forestry service personnel along with city and county fire departments. FIRESCOPE's charter was to examine various aspects of interagency response to incidents. These agencies saw the need to document a system that allowed them to work together toward a common goal in an effective and efficient manner.

FIRESCOPE derives its name from FIre RESources of California Organized for Potential Emergencies. The FIRESCOPE ICS is primarily a command and control system delineating job responsibilities and organizational structure for the purpose of managing day-to-day operations for all types of emergency incidents. While originally developed for wildland incidents, it was found that the system could be easily applied to day-to-day fire and rescue operations. It is also flexible enough to manage catastrophic incidents involving thousands of emergency response and management personnel. This system is often referred to as the National Fire Academy Model Incident Command System. (See Figure 2-1)

FIGURE 2-1 In addition to routine fires or emergency medical incidents, the incident command system can handle unusual incidents, such as a plane crash. *Used with permission of William J. Shouldis.*

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NATIONAL INTERAGENCY INCIDENT MANAGEMENT SYSTEM (NIIMS)

A group of federal agencies, which included the Bureau of Land Management (BLM), the Bureau of Indian Affairs (BIA), the U.S. Fish and Wildlife Service (USFWS), the U.S. Forest Service (USFS), representatives of the National Association of State Foresters (NASF), and the National Park Service (NPS), found ICS to be adaptable to a wide range of situations, including floods, hazardous materials incidents, earthquakes, and aircraft crashes. This was accomplished by introducing minor terminology, organizational, and procedural modifications to FIRESCOPE ICS. These modifications created the National Interagency Incident Management System Incident Command System, or NIIMS ICS, which was adaptable to an all-hazards environment. While tactically each type of incident may be handled somewhat differently, the overall incident management approach still utilizes the major functions of the ICS.

NIIMS consists of five major subsystems that collectively provide a total systems approach to risk management. The subsystems are:

- ICS, which includes operating requirements, eight interactive components, and procedures for organizing and operating an on-scene management structure
- Training that is standardized and supports the effective operations of NIIMS
- A qualification and certification system that provides personnel across the nation with standard training, experience, and physical requirements to fill specific positions in the ICS
- Publications management that includes development, publication, and distribution of NIIMS materials
- Supporting technologies such as orthophoto mapping, infrared photography, and Multiagency Coordinating Systems (MACS) that support NIIMS operations

In the ensuing years FIRESCOPE and NIIMS were blended. The National Wildfire Coordinating Group (NWCG) was chartered to coordinate fire management programs of the various participating federal and state agencies. The FIRESCOPE agencies and the NWCG have worked together to update and maintain the Incident Command System Operational System Description. This document would later serve as the basis for the National Incident Management System (NIMS) ICS.

Incident Command System

ICS is a management system designed to control personnel, facilities, equipment, and communications throughout an emergency operation. It is intended to begin developing from the time an incident occurs until the requirement for management and operations no longer exists. The structure of the ICS can be established and expanded depending upon the changing conditions of the incident.

The system can be used for any type or size of emergency, ranging from a minor incident involving a single unit, to a major emergency involving several agencies. ICS allows agencies to communicate using common terminology and operating procedures. It also allows for the timely combining of resources during an emergency.

ICS is designed to be used in response to all hazards: fires, floods, earthquakes, hurricanes, tornadoes, tidal waves, riots, hazardous materials, or other natural or human-caused incidents.

ICS has management capabilities for:

1. Single jurisdiction/single agency involvement (Single Incident Commander)
2. Single jurisdiction/multiagency involvement (Unified Command)
3. Multi-jurisdiction/multiagency involvement (Unified Command)

ICS allows emergency responders:

- An organizational structure adaptable to any emergency or incident to which response agencies would be expected to respond
- A system applicable and acceptable to users throughout the country
- A system readily adaptable to new technology
- The ability to expand in a logical manner from an initial attack situation into a major incident
- Basic common elements in organization, terminology, and procedures
- Implementation with the least possible disruption to existing systems
- Effectiveness in fulfilling all management requirements costs

The system is intended to be staffed and operated by qualified personnel from any emergency services agency and may involve personnel from a variety of agencies.

Components of the Incident Command System   ICS has eight interactive components. These components provide the basis for an effective ICS concept of operation:

- Common terminology
- Modular organization
- Integrated communications
- Unified Command structure
- Consolidated action plans
- Manageable span of control
- Designated incident facilities
- Comprehensive resource management

Common Terminology   The need for common terminology in any ICS is essential. Major organizational functions and units are pre-designated and titled in the ICS, and the system's terminology is standard and consistent. To prevent confusion when multiple incidents occur within the same jurisdiction or on the same radio frequency, each one should be named. (A fire located on Broad Street would be named Broad Street Command. A fire occurring at the same time on Market Street would aptly be named Market Street Command, alleviating any possible confusion between the two incidents.)

Common names are established and used for all personnel, equipment, and resources conducting tactical operations within the ICS, as well as for all facilities in and around the incident area. When units are given a designated function they will no longer use their standard call letters. They will adopt their new designation for all communications, i.e., Engine 1's officer, assigned as Division 1 Supervisor, will then use Division 1 for all radio communications and not Engine 1. If Battalion 1 assumes command it will use the title Command or Broad Street Command when communicating on the incident scene. Likewise, facilities will be designated as Base, Staging, Command Post, etc.

Modular Organization   The ICS organizational structure develops in a modular fashion from the top down at any incident. The functional areas, which are implemented as the need develops, are Command, Operations, Logistics, Planning, and Finance/Administration. The command function is always established. The specific ICS organizational structure for any incident is based on the incident's management needs. For example, a simple incident does not require staffing sections to manage each major functional area. The operational demands and the small number of resources do not require the delegation of management functions. However, a complex incident may require staffing sections to manage each major functional area, and the number of resources committed may require delegating management functions.

Modular expansion can be implemented at an incident, e.g., a mass casualty or hazardous materials incident. These particular incidents create specific types of problems that need to be addressed. A mass casualty incident may require triage, treatment,

transportation, and other functions to be initiated. Similarly, a hazardous materials incident will require trained technicians to mitigate the problems through product identification, intervention, and mitigation. By assigning competent personnel as a Group Supervisor or Branch Director, these critical types of incidents can be well managed.

Integrated Communications Integrated communications involves managing communications at an incident through the use of a common communications plan. Standard Operating Guidelines (SOGs) should be established using common terminology and clear text. Effective two-way communication is essential to effective incident management. Not only is it important that messages are received, but it is also important that they are properly acknowledged. Interoperability of communications is needed for diverse agencies to be able to effectively interact at an incident scene. This includes the ability of fire, police, and other agencies to have access to common communication networks.

Unified Command The command function within ICS may be conducted in two general ways. Single command may be applied when there is no overlap of jurisdictional boundaries or when a single IC is designated by the agency with overall management responsibility for the incident. Unified Command may be applied when the incident is within one jurisdictional boundary, but more than one agency shares management responsibility (i.e., a civil disturbance requiring a large commitment from fire and police departments where civil unrest and multiple fires are involved). Unified Command also is used when an incident is multijurisdictional in nature and more than one agency needs to share overall management responsibility (i.e., a wildland fire involving federal, state, and local fire departments).

Incident Action Plan Every incident needs an Incident Action Plan (IAP). On most incidents the IAP will not be written; rather, it usually is a thought process of the Incident Commander. Written IAPs should be considered whenever:

- Multiple jurisdictions are involved in the response
- The incident is of a long duration or will involve multiple operational periods
- A number of ICS organizational elements are activated (typically when all General Staff Sections are staffed)
- It is required by agency policy
- Hazardous materials are involved in the incident

The plan should cover incident objectives, strategies, tactics, and support activities needed during the operational period. This can be accomplished on long-duration incidents where the incident management team (IMT) will develop the upcoming operational period IAP. The IMT normally has a formal planning meeting to establish an IAP for the next operational period. This plan will be its blueprint to handle the current and foreseeable problems. (IAPs are discussed in further detail in Chapter 3.)

An operational period is usually a set period of time that an IMT will be supervising an incident; it can be a 6-, 8-, 12-, or 24-hour time period during the response phase, and weeks or months during a recovery phase.

Manageable Span of Control Span of control refers to the number of personnel reporting to any given individual. Optimal span of control in the ICS is five, with an acceptable spread of two to seven. With a situation that is not yet under control, typically no one operating under the ICS should have more than five personnel reporting to him or her (the rule of five).

Span-of-control ratios can be driven by a number of factors. They are:

- *Training/experience level of subordinates.* Poorly trained or less experienced personnel require more direct supervision, thereby lessening the number of subordinates one can manage effectively. Likewise, highly trained and experienced personnel require less direct supervision.
- *Complexity of the incident.* The more complex the incident the less the number of personnel that can be effectively managed. A hazardous materials incident may require more mental concentration, thereby leaving less time available to supervise personnel.
- *Type or time frame of the incident.* The speed in which an operation is progressing may influence the span of control. A fast-moving incident may require a tighter span of control with fewer Divisions/Groups in place; in a slower-moving operation such as overhaul, the supervisor is less pressed for time and decision making and therefore can manage more personnel.

For span-of-control purposes, the following functions are not counted against the "rule of five" as reporting to a supervisor: Safety Officer, Liaison Officer, PIO, Rapid Intervention Crew, and Staging Area Manager.

By dividing the incident into manageable segments, the Incident Commander is able to reduce the number of individuals directly reporting to him or her and is able to properly manage the incident.

Command officers must anticipate span-of-control problems and prepare for them, especially during rapid buildup of incident organization. Effective management is difficult if too many people are reporting to one supervisor.

Designated Incident Facilities Designated incident facilities—such as a Command Post (CP), an Incident Base, or a Staging Area—can be established based on the requirements of the incident. The IC or Logistics determines when these facilities are established and where they are located.

The CP is the location from which all incident operations are directed. Only one CP should be established per incident. (The establishment of only one CP is critical when operating with multiple agencies. In the past, each agency wanted to establish its own CP, which led to confusion and a weak Command at these incidents.) Cooperating and assisting agency representatives are assigned to the Liaison Officer. Those agencies with a statutory responsibility for incident outcome will be part of a Unified Command. An incident base can be implemented for high-rise fires, hazardous materials incidents, and wildland fires. It is an area where primary logistics functions are coordinated and administered. (Whereas staging is a location from which units can be rapidly deployed within three minutes, the location of base will be a safe distance from the incident scene and units will not be readily deployable.)

Comprehensive Resource Management Comprehensive resource management may be accomplished using three different methods, depending on the needs of the incident.

1. *Single resources* include individual engines, squads, ladder trucks, rescues, crews, etc.
2. *A task force* is a group of resources, having common communications and a leader, which may be pre-established and sent to an incident, or formed at an incident (e.g., two engines, a truck, and a chief officer formed as a task force for a specific assignment).
3. *A strike team* is specified combinations of the same kind and type of resources, with common communications and a leader (e.g., five engines and a chief officer would form a strike team of engines).

Comprehensive resource management, when performed effectively, should maximize resource use, consolidate control of large numbers of single resources, and reduce the communications load.

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Major Functional Areas The ICS has five major functional areas:

1. Command
2. Operations
3. Planning
4. Logistics
5. Finance/Administration

Use of the ICS improves safety by providing proper supervision, accountability, coordinated efforts, and improved communications. Effective incident management also minimizes "freelancing" and can reduce the department's or jurisdiction's liability, as well as the financial impact of emergencies on the community.

U.S. Department of Homeland Security

In the aftermath of the attacks on the United States of America at the World Trade Center and the Pentagon on September 11, 2001, the President of the United States and Congress created the **U.S. Department of Homeland Security** (DHS).

DHS's responsibility of protecting the citizens of the United States encompasses many areas. One major function is coordination of all emergency responses. On March 1, 2003, the Federal Emergency Management Agency (FEMA) became part of DHS. FEMA's continuing mission within the new department is to lead the effort to prepare the nation for all hazards and effectively manage federal response and recovery efforts following any national incident.

U.S. Department of Homeland Security
■ Its mission is to lead the unified national effort to secure the country and preserve our freedoms. While created to secure our country against those who seek to disrupt the American way of life, its charter also includes preparation for and response to all hazards and disasters.

HOMELAND SECURITY PRESIDENTIAL DIRECTIVES

On February 28, 2003, the President issued Homeland Security Presidential Directive-5 (HSPD-5), which directs the Secretary of Homeland Security to develop and administer a National Incident Management System (NIMS). It states in part:

> This system will provide a consistent nationwide approach for Federal, State, and Local governments to work effectively and efficiently together to prepare for, respond to, and recover from domestic incidents, regardless of cause, size, or complexity. To provide for interoperability and compatibility among Federal, State and Local capabilities, the NIMS will include a core set of concepts, principles, terminology, and technologies covering the incident command system; multiagency coordination systems; unified command; training; identification and management of resources; qualifications and certification; and the collection, tracking, and reporting of incident information and incident resources.

The reason for and mandates of HSPD-5 are:

> [in order] to prevent, prepare for, respond to, and recover from terrorist attacks, major disasters, and other emergencies, the United States Government shall establish a single, comprehensive approach to domestic incident management. The objective of the United States Government is to ensure that all levels of government across the Nation have the capability to work efficiently and effectively together, using a national approach to domestic incident management.

All federal departments and agencies are required by Homeland Security to adopt the NIMS and to make NIMS adoption by state and local organizations a condition for federal preparedness assistance.

NIMS has six components:

1. Command and management
2. Preparedness
3. Resource management

4. Communications and information management
5. Supporting technologies
6. Ongoing management and maintenance

Command and Management   The NIMS standardizes incident management for all hazards and across all levels of government. The NIMS–standard incident command structures are based on three key components:

- *Incident Command System (ICS).* ICS is a standardized on-scene emergency management designed to provide for the adoption of an integrated organizational structure that reflects the complexity and demands of single or multiple incidents, without being hindered by jurisdictional boundaries. ICS is the combination of facilities, equipment, personnel, procedures, and communications operating with a common organizational structure, designed to aid in the management of resources during incidents. ICS is used for all kinds of emergencies and is applicable to small as well as large and complex incidents. ICS is used by various jurisdictions and functional agencies, both public and private.
- *Multiagency Coordination Systems (MACS).* On large- or wide-scale emergencies that require higher-level resource management or information management, MACS may be required. MACS is a combination of resources that are integrated into a common framework for coordinating and supporting domestic incident management activities. These resources may include facilities, equipment, personnel, procedures, and communications. The primary functions of MACS are to:
  - Support incident management policies and priorities
  - Facilitate logistics support and resource tracking
  - Make resource allocation decisions based on incident management priorities
  - Coordinate incident-related information
  - Coordinate interagency and intergovernmental issues regarding incident management policies, priorities, and strategies

    MACS includes **Emergency Operations Centers** (EOCs), locations from which the coordination of information and resources to support incident activities takes place, and in certain multi-jurisdictional or complex incidents, Multiagency Coordination Entities, which typically consist of principals from organizations with direct incident management responsibilities or significant incident management support or resource responsibilities. Direct tactical and operational responsibility for the conduct of incident management activities rests with the **Incident Commander**.
- *Public Information Systems.* The Public Information Officer (PIO) is a member of the command staff and operates within the parameters established for the Joint Information System (JIS). The JIS provides an organized, integrated, and coordinated mechanism for providing information to the public during an emergency. Key elements of a JIS include interagency coordination and integration, developing and delivering coordinated messages, and support for decision makers. To ensure coordination of public information a Joint Information Center (JIC) can be established. Using the JIC as a central location, information can be coordinated and integrated across jurisdictions and agencies, and among all governmental partners, the private sector, and nongovernmental agencies.

Preparedness   The NIMS establishes specific measures and capabilities that jurisdictions and agencies should develop and incorporate into an overall system to enhance operational preparedness for incident management on a steady-state basis in an all-hazards context.

   The operational preparedness of our nation's incident management capabilities is distinct from the preparedness of the individual citizens and private industry.

emergency operations center ■ The purpose of the EOC is to ensure that departmental response capabilities are maintained and authoritative information is disseminated to the general public. The EOC allows field commanders to focus on the incident scene while the EOC staff is responsible for handling coordination and support endeavors.

incident commander ■ Has the responsibility for the overall management of an incident.

Resource Management The NIMS defines standardized mechanisms to describe, inventory, track, and dispatch resources before, during, and after an incident; it also defines standard procedures to recover equipment once it is no longer needed for an incident.

Communications and Information Management Effective communications, information management, and information and intelligence sharing are critical aspects of domestic incident management. The NIMS communications and information systems enable the essential functions needed to provide a common operating picture and interoperability for incident management at all levels.

Supporting Technologies The NIMS promotes national standards and interoperability for supporting technologies to successfully implement the NIMS, as well as standard technologies for specific professional disciplines or incident types. It provides an architecture for science and technology support to incident management.

Ongoing Management and Maintenance The DHS will establish a multijurisdictional, multidisciplinary NIMS Integration Center. This Center will provide strategic direction for, and oversight of, the NIMS, supporting both routine maintenance and the continuous improvement of the system over the long term.

The NIMS Integration Center will facilitate the development and promulgation of the standards addressing the components of the NIMS.

DIFFERENCES BETWEEN FIRESCOPE AND NIMS

NIMS adopted the FIRESCOPE Model ICS system. There are two minor differences between the NIMS ICS and the FIRESCOPE Model ICS.

1. Under NIMS, the position of Intelligence/Investigations is created. This position is used to assist the Incident Commander(s) in developing sufficient data in the event of a terrorist event or other activity involving the need for police intelligence. It is a position that will normally be staffed by local, state, or federal police officials. The Intelligence/Investigations function may be organized in one of the following ways:
   - Officer within the Command Staff
   - Unit within the Planning Section
   - Branch within the Operations Section
   - Separate General Staff Section
2. Under NIMS, the Command Staff position previously known as "Information Officer" will be known as "Public Information Officer."

Resource Central

A chart of the model incident command system is shown in Incident Command System Organization Chart.

INCIDENT MANAGEMENT TEAMS

Throughout the United States incident management teams (IMTs) have been created at the national, state, and local levels. These IMTs consist of individuals that are trained in the all-hazard approach of managing various levels of incidents based upon their size and complexity. The IMT members are trained in the various sections and positions of the incident command system. When a team is requested by federal, state, or local organizations it can utilize its leadership and communication skills at complex incidents. Its area of expertise is the implementation of incident objectives, strategies and tactics, and the initiation and management of Incident Management Teams. These IMTs are trained for all-hazard incidents to assume any role or position specific responsibilities required by the situation

A concept that has been adopted in some areas is the creation of Incident Support Teams (IST). It was recognized that many fire departments and other agencies do not have the staffing to handle the many roles needed at a major incident. Often, the calling of additional resources will bring additional companies and the officers responding will be needed to manage those resources. The premise of the IST is to support and mentor

the local IMT and not to take over an incident. These IST can support a local team and offer their expertise to provide various levels of documentation. A common arrangement is that the members of the IST report to the Incident Commander, and work in a support role for Planning, Logistics, Staging, Public Information Officer, Safety Officer, and other areas serving at the Incident Commander's pleasure.

INCIDENT TYPES

The U.S. Fire Administration has created a "typing" of incidents to denote the level of expertise that is needed to manage the incident, based upon incident size. The types are listed from Type 5, which is the smallest or routine incident size, to Type 1, which is the most complex. By identifying the type of incident, an appropriate response of an IMT can be dispatched, and decisions can be made on resource requirements. Incident types are based on the following five levels of complexity.

Type 5
- The incident can be handled with one or two single resources with up to six personnel.
- Command and General Staff positions (other than the Incident Commander) are not activated.
- No written Incident Action Plan (IAP) is required.
- The incident is typically contained within an hour or two after resources arrive on scene.
- Examples include a vehicle fire, an injured person, or a police traffic stop.

Type 4
- Command Staff and General Staff functions are activated only if needed.
- Several resources are required to mitigate the incident, possibly including Task Forces or Strike Teams.
- The incident is typically contained within one operational period in the control phase, usually within a few hours after resources arrive on scene.
- The Agency Administrator may have briefings to ensure the complexity analysis and that the delegation of authority is updated.
- No written IAP is required but a documented operational briefing will be completed for all incoming resources.
- Examples may include a major structure fire, a multiple vehicle crash with multiple patients, an armed robbery, or a small hazmat spill.

Type 3
- When capabilities exceed initial attack, the appropriate ICS positions should be added to match the complexity of the incident.
- Some or all of the Command and General Staff positions may be activated, as well as Division/Group Supervisor and/or Unit Leader level positions.
- A Type 3 Incident Management Team (IMT) or incident command organization manages initial action incidents with a significant number of resources, an extended attack incident until containment/control is achieved, or an expanding incident until transition to a Type 1 or Type 2 team.
- The incident typically extends into multiple operational periods.
- A written IAP is typically required for each operational period.
- Examples include a tornado touchdown, earthquake, flood, or multiday hostage stand-off situation.

Type 2
- This type of incident extends beyond the capabilities for local control and is expected to go into multiple operational periods. A Type 2 incident may require the response of resources from out of the area, including regional and/or national resources, to effectively manage the operations.
- Most or all of the Command and General Staff positions are filled.

- A written IAP is required for each operational period.
- Many of the functional units are needed and staffed.
- Operations personnel normally do not exceed 200 per operational period and total incident personnel do not exceed 500 (guidelines only).
- The Agency Administrator is responsible for the incident complexity analysis, Agency Administrator briefings, and the written delegation of authority.
- Typically involve incidents of regional significance.

Type 1
- This type of incident is the most complex, requiring national resources to safely and effectively manage and operate.
- All Command and General Staff positions are activated.
- Operations personnel often exceed 500 per operational period and total personnel will usually exceed 1,000.
- Branches need to be established.
- The Agency Administrator will have briefings, and ensure that the complexity analysis and delegation of authority are updated.
- Use of resource advisors at the incident base is recommended.
- There is a high impact on the local jurisdiction, requiring additional staff for office administrative and support functions.
- Typically involve incidents of national significance.
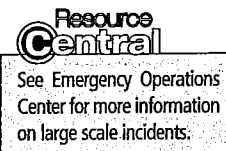
The Incident Commander

The position of Command encompasses every phase of an incident and must be implemented on every assignment. The Incident Commander assumes a high level of responsibility due to the need to protect lives and property while ensuring the safety of firefighters as they attempt to accomplish their tasks. (See Figure 2-2)

Incident Commander

FIGURE 2-2 Incident Commander.

The responsibilities of the Incident Commander (IC) (or "Command" as it is commonly referred to) include gathering and evaluating information relative to preplanning and size-up, as well as development and communication of plans.

A successful command system requires delegation of authority and responsibility. Orders and decision-making must be performed at the lowest level in an organization that has the ability to make those decisions.

Although the IC may delegate functional authority, he or she always retains ultimate responsibility for the incident. If the IC chooses not to delegate authority for one or more functions, then the IC must perform those functions.

The IC must direct available resources to accomplish incident goals. A responsive organization must be developed to ensure proper incident management by coordination of command, tactical operations, and support functions.

The IC must be able to communicate effectively within the organization and assess feedback. The use of terms that are understood by all resources is critical to the proper managing of an incident.

Gathering and assigning resources functionally and geographically are also included in the IC's responsibilities.

Overall effectiveness of the IAP must be continually evaluated to ensure that the operational decisions are correct and being properly applied. By using this feedback the IC can modify the IAP if necessary.

COMMAND RESPONSIBILITIES

The command responsibilities of the IC are to:

- Assess incident priorities
- Determine incident objectives

- Determine strategy
- Determine tactics when there is no Operations Section Chief
- Develop Incident Action Plan (IAP)
- Develop appropriate organizational structure
- Manage incident resources
- Coordinate overall incident activities
- Ensure safety of on-scene personnel
- Coordinate activities of outside agencies
- Authorize release of information to media

Unified Command

Unified Command
**Incident Commander**

Police	Fire

FIGURE 2-3 Unified Command.

Unified Command allows agencies with jurisdictional responsibility to participate in the management of an incident. This participation is demonstrated by developing and implementing a common set of incident objectives and strategies that all can subscribe to, without losing or abdicating agency authority, responsibility, or accountability (additional information on the role of Unified Command is contained in Chapter 3 under "Reviewing the Planning 'P'"). (See Figure 2-3)

Incidents involving hazardous materials, natural disasters, terrorist events, or wildland fires may involve a number of jurisdictions and/or agencies that will need to be involved in the decision-making process. This will require the implementation of Unified Command. Instead of one person being in charge of the event, command decisions will be made by a group of individuals appointed by their respective agencies. They will ultimately decide priorities for resource assignment, with overall success for all agencies and jurisdictions being the outcome. (See Figure 2-4)

Under the Unified Command concept, all involved agencies contribute to the command process. Objectives, strategies, conducting integrated tactical operations, and maximizing the use of all available resources are decided jointly.

Selection of participants to work effectively within a Unified Command structure depends on the location and type of incident. They must support the incident with resources at their disposal. Problems can occur with Unified Command if individuals or groups do not subordinate their personal goals for the overall good of mitigating the incident. Previous training or experience of the individuals as a group will enhance the probability of their success. A Unified Command structure could consist of a key official

FIGURE 2-4 Unified Command may be necessary when multiple agencies are involved. The collapse of this pier used as a nightclub took the lives of three people and required extrications and water rescues of many others. This operation involved the interaction of numerous agencies. *Used with permission of William J. Shouldis.*
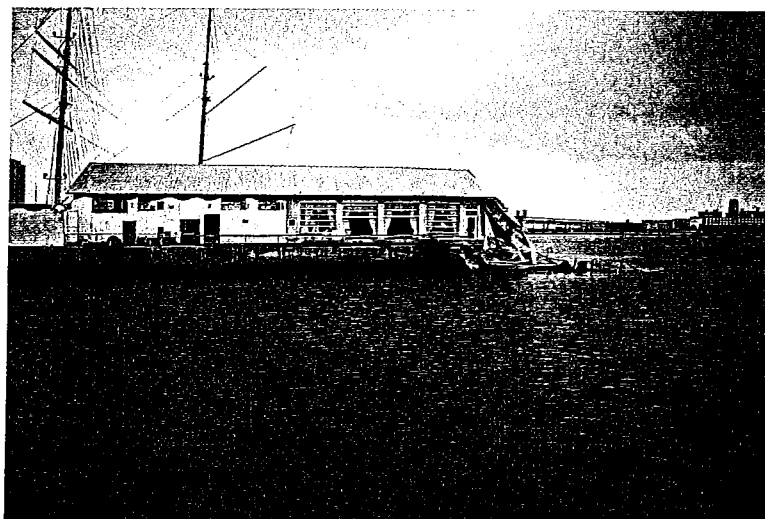
from each jurisdiction, or representatives of several functional departments within a single political jurisdiction.

Unified Command can be implemented should any of the following occur:

- A fire spreads to include local, county, state, and federal fire agencies, where each fire department will be directly affected (multi-jurisdiction/multiagency involvement).
- A hazardous material incident directly impacts numerous agencies within a single jurisdiction. This could involve fire, police, and public health agencies (single jurisdiction/multiagency involvement).
- A mass casualty incident involves fire, emergency medical services (EMS), police, and other agencies (single jurisdiction/multiagency involvement or multi-jurisdiction/multiagency involvement).
- A terrorist event over a widespread area involves fire, police, and federal and state agencies (multi-jurisdiction/multiagency involvement).

To be successful in implementing a Unified Command requires:

1. A written plan that stipulates how the system will be applied
2. Application of the plan in simulated situations
3. Support for Unified Command by all participants at an incident
4. Those serving as part of Unified Command to have the authority to deliver the needed resources from their own organization

(*Note:* Implementing the IAP under Unified Command is the responsibility of the Operations Section Chief.)

Some factors in helping to determine whether an agency should be part of Unified Command are:

1. Does the agency/jurisdiction have a clear legal or jurisdictional responsibility to respond to this incident?
2. Would this agency normally spend money to respond to some aspect of this incident?
3. Does this agency have funds and/or resources to support participation in this response organization?
4. Do the other agencies in Unified Command agree that this agency meets the criteria for Unified Command?

INCIDENT COMPLEX AND AREA COMMAND

ICS is designed to handle various types of emergency situations. To accomplish that task may require implementation of either an incident complex or area command.

Incident Complex

An incident complex is two or more individual incidents located in the same general proximity that are assigned to a single Incident Commander or Unified Command to facilitate management. These incidents are typically limited in scope and complexity and can be managed by a single IMT.

An example would be a number of wildland fires, each fire being separate, but in the same general area. Rather than create separate incidents for each fire, one Incident Management Team (IMT) can be employed. An organizational tool to facilitate the handling of these fires would be the assigning of individual branches or divisions for each fire.

Area Command

The incident command system is very flexible. To maintain that flexibility, it can expand to handle a very large incident, or area, with multiple incident management teams. It accomplishes this management by establishing an Area Command. Area Command can be used any time incidents are close enough that oversight direction is required of multiple incident management teams to ensure that conflicts do not arise.

Area Command can be implemented on incidents involving wildland fires and natural or man-made disasters affecting multijurisdictional areas. Due to the size of these events they create the appropriate situation for the possible use of Area Command.

The criteria for implementing Area Command are:

- Several major or complex incidents of the same kind are in close proximity.
- Critical human or property values are at risk due to the incidents.
- Incidents will continue into the next operational period.
- Incidents are using similar resources and there are limited critical resources.
- Difficulties are encountered with inter-incident resource allocation and coordination.

Area Command is beneficial since:

- Coordination needed between IMTs can be accomplished by the Area Commander.
- Area Command will set priorities between incidents and allocate critical resources according to the priorities established by the Agency Executive (or Agency Administrator).
- Area Command helps the Agency Executive by ensuring that agency policies, priorities, constraints, and guidance are being made known to the respective Incident Commanders.

The Area Command organization should be kept as small as possible. Area Command can initiate the following functions if necessary:

- Assistant Area Commander Logistics
- Assistant Area Commander Planning
- Area Command Critical Resources Unit Leader
- Area Command Situation Unit Leader
- Area Command Public Information Officer
- Area Command Liaison Officer

Area Command may add Technical Specialists to provide specific information and expertise depending upon the type of incidents involved. It is important to remember that Area Command does not in any way replace the incident-level ICS organizations or functions. The above positions, if established, are strictly related to Area Command operations.

Defining Command

Leadership goes a long way toward ensuring that actions at an emergency scene will proceed properly. Someone must be in charge. At a fire or other incident, success or failure is entrusted to the Incident Commander. The primary duty of Command is taking control of the overall situation. It is the most visible function at the scene.

The Incident Commander is responsible for all functions at an incident scene. Every incident must have an Incident Commander and that person must follow a sequential process to ensure that nothing has been overlooked.

PROBLEMS FACING COMMAND

Command must be able to predict changes in the incident scene while evaluating the effectiveness of the firefighting efforts. The importance of firefighter safety demands that they be an integral part of a known plan. This will prevent firefighters from inadvertently being placed in dangerous positions.

The problems facing Command are the same regardless of the size of the department. The best solution to handling incident problems is calling for and receiving sufficient resources. When insufficient resources exist, it will impact the plan being formulated. When operating with limited resources, the Incident Commander may feel a tendency to become involved physically, which can result in critical areas being overlooked.

Firefighters can be seriously injured or killed if the command function is omitted or not used properly. There are enough dangers to contend with; lack of Command should not be one of them. A department with minimal staffing must look at a system as the best way of maximizing its resources and maintaining safety. Utilization of an incident management system may be the single most effective way to increase firefighter safety.

Since an incident must be handled in an effective manner, someone must be in charge. When an emergency occurs, the fire department is called and we respond. When no one knows how to handle a particular emergency, everyone looks to the fire department for direction.

It is important to realize that we have been called to stabilize the incident and not be part of the problem—but be the solution to the problem.

Constant reevaluation of the incident is necessary to ensure that the incident objectives, strategies, tactics, and tasks are accomplishing the goals of the Incident Commander. If not, adjustments will need to be implemented to reach those goals. (See Figure 2-5)

UNITY OF COMMAND

Before many fire departments implemented a command system, fireground command was similar to an old western movie where Indians would attack by circling a wagon train. Chief officers would continuously circle the fireground, each giving orders. This often created conflicting orders, leading to confusion and frustration on the part of the firefighters.

FIGURE 2-5 Command must be able to predict changes in the incident scene while evaluating the effectiveness of the firefighting effort. *Used with permission of James H. Bampfield, Jr.*
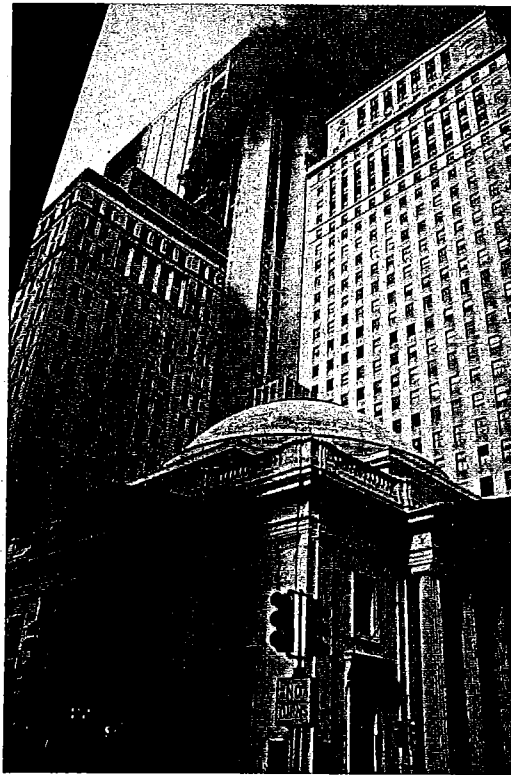
Unity of command dictates that *no person reports to more than one person and everyone has someone to answer to*. Departments that adhere to the principle of "unity of command" avoid contradictory orders and their emergency scenes are better organized. Should a conflict occur, the person receiving the latest order should bring it to the attention of the officer giving the conflicting order and be guided by his or her reply.

The Incident Commander at most incidents will oversee the tactical operations and sector the scene, ensuring that his or her span of control remains manageable. The basic assignments for a building fire will usually include one company on fire attack, another assigned to search and rescue, another performing ventilation, and a rapid intervention crew. The position of Command will be assumed by the initial company officer or a chief officer.

Large or complex incidents make many demands on the Incident Commander. To guard against becoming overwhelmed and to reserve sufficient time to make decisions on problems the incident presents, the Incident Commander must be prepared to expand the incident management system based on incident needs and demands. The aim is to control the incident, not to develop a fancy system. As general staff positions are created, the section chiefs delegated these assignments can implement any additional components of the system that are needed to accomplish their goals. This is an important point. Additional positions should be implemented to address the complexity of problems that arise or are anticipated.

INCIDENT ACTION PLAN

An incident action plan (IAP) must be developed. This IAP will require that information be gathered pertaining to the incident. On small incidents the IAP will usually only consist of a thought process by the Incident Commander, while on larger incidents it should be written. (Incident Action Plans [IAPs] are discussed in detail in Chapter 3.)

NIOSH FIREFIGHTER FATALITY REPORT F2007–18

On June 18, 2007, nine career firefighters died when they became disoriented and ran out of air in rapidly deteriorating conditions inside a burning commercial furniture showroom and warehouse facility. The first arriving engine company found a rapidly growing fire at the enclosed loading dock connecting the showroom to the warehouse. The Assistant Chief entered the main showroom entrance at the front of the structure but did not find any signs of fire or smoke in the main showroom.

He observed fire inside the structure when a door connecting the rear of the right showroom addition to the loading dock was opened. Within minutes, the fire rapidly spread into and above the main showroom, the right showroom addition, and the warehouse. The burning furniture quickly generated a huge amount of toxic and highly flammable gases along with soot and products of incomplete combustion that added to the fuel load. The fire overwhelmed the interior attack crews and they became disoriented when thick black smoke filled the showrooms from ceiling to floor. The interior firefighters realized they were in trouble and began to radio for assistance as the heat intensified. One firefighter activated the emergency button on his radio. The front showroom windows were knocked out and firefighters, including a crew from a mutual-aid department, were sent inside to search for the missing firefighters. Soon after, the flammable mixture of combustion byproducts ignited, and fire raced through the main showroom. Interior firefighters were caught in the rapid fire progression and nine firefighters from the first-responding fire department died. At least nine other firefighters, including two mutual-aid firefighters, barely escaped serious injury.

Key contributing factors identified in this investigation include: not having a written standard operating procedure (SOP) for a safety and health program, operating without a written Incident Management System, the lack of SOPs identifying requirements for members expected to serve in command roles, the need to ensure that the Incident Commander (IC) is the only individual with overall authority and responsibility for management of all activities at an incident, the need to ensure that the IC conducts an initial size-up and risk assessment of the incident scene before beginning interior firefighting operations, the need to communicate interior conditions to the IC as soon as possible and provide regular updates, the need to ensure that a stationary command post is established, the need to ensure that the IC maintains the role of director of fireground operations and does not become involved in firefighting efforts, the need to ensure the early implementation of divisions/groups, the need to ensure that the IC continuously evaluates the risk versus gain when determining whether the fire suppression operation will be offensive or defensive, the need to ensure that the IC maintains close accountability for all personnel operating on the fireground, the need to ensure that a separate Incident Safety Officer who is independent from the IC is appointed at each structure fire, the need to ensure that crew integrity is maintained during fire suppression operations, the need to ensure that a rapid intervention crew (RIC) is established and available to respond immediately to emergency rescue incidents, the need to ensure that adequate numbers of staff are available to respond immediately to emergency incidents, and the need to ensure that ventilation to release heat and smoke is closely coordinated with interior fire suppression operations.

There are numerous additional key contributing factors associated with the outcome of this fire that can be accessed at the NIOSH website.

Once it is known what incident objectives must be accomplished, sufficient resources to accomplish those goals can be requested. The plan will consider resources at the incident scene and those available upon request. It also must consider the response time and capabilities of the units.

DIRECTING RESOURCES

When implementing the IAP, consider the order of accomplishing tasks: the effectiveness and time needed and doing the right task at the right time. Directing resources or activities is a major function of Command.

Coordinating operations is similar to fitting the pieces of a puzzle together. The proper sequence of events must be followed to complete the right task at the right time. Line placement, forcible entry, search and rescue, and ventilation must be coordinated. The hose-line crew may not be able to gain entry into the fire area until ventilation has been effected. Opening a roof in the wrong location or before attack lines are ready can cause a fire to spread to other areas.

Command must evaluate decisions made prior to his or her arrival. A thorough analysis should ascertain if the plan in place will effectively achieve the goals required. If the proper goals will be reached, though by different means, the new Incident Commander must allow the plan to continue. If minor adjustments are needed, they should be done.

Because decisions will be based upon available information, time constraints are a realistic consideration. Use of reports received by subordinate officers will help. Though each situation is different, decisions are based on readily available information. Securing all information before making a decision, even if possible, consumes too much time and normally is not a practical approach at most incident scenes.

A difficult decision must be made when the plan in place will not accomplish what must be done. Whether modification, expansion, or even starting over again is required, the necessary changes must be made. The Incident Commander must not live with an intolerable situation. Conditions can change in minutes from a situation that originally required an interior attack but now requires an exterior attack. With rapidly changing conditions, orders must be given immediately, since a delay can jeopardize firefighters.

CONTROLLING THE INCIDENT

Effective control of an incident dictates that certain functions be performed. The Incident Commander at a major incident becomes a manager. He or she must make use of staff by delegating tactical decisions to subcommands, giving an overall objective, and allowing those who will achieve the objective the latitude to accomplish the task. Specific point-by-point orders become counterproductive. They allow no discretion by the individual officer, and if the task can't be performed exactly as ordered, it frequently necessitates additional questions.

An important point is that ample training is required of all members prior to the implementation of any command system. This includes not only simulations and exercises to gain familiarization but specific training in the command and general staff positions. This training must cross agency and jurisdictional boundaries to prove successful at future incidents. This can be quite time-consuming when training for the positions of Safety, Logistics, Planning, Finance, and Liaison. Numerous situations must be practiced. Each participant should be allowed the opportunity to role-play in each incident command position that he or she will be required to assume at an incident. In fact, multiple opportunities at each position work the best. This training should be done under the direction of a trainer who can point out the correct procedures and pitfalls that could occur. Through the constant use of the incident management system, coupled with training and critiquing of an incident, members will achieve proficiency.

COMMAND STAFF

A command staff can be utilized to assist Command in performing some basic functions. This consists of the positions of Safety, Public Information, and Liaison officers and can include the additional position of Intelligence/Investigations Officer. Each position can be critical depending upon the type of incident and demands on the Incident Commander's time. Realize that Command is responsible for all functions at an incident. On a minor incident, Command can personally address each area of concern. On major incidents, delegation is necessary.

COMMAND STAFF

- Safety Officer
- Public Information Officer
- Liaison Officer
- Intelligence/Investigations Officer

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FIGURE 2-7

Safety Officer

Because firefighter safety is a prime concern, the appointment of a Safety Officer will help address safety. The Safety Officer will report to the Incident Commander and see what specific concerns the IC may have. (See Figure 2-6) The next step is a survey of the incident scene to look for unsafe conditions. The Safety Officer will discuss safety issues with Division and Group Supervisors and report back to Command with an overview of the scene. Safety concerns will be presented to Command for action. Should the Safety Officer discover an operation that involves an unsafe act that needs immediate correction, he or she has the responsibility and authority to stop that act. This usually is accomplished through a suggestion to the units involved, though if necessary, the suggestion can become an order if the suggestion is not immediately heeded. (The duties of the Safety Officer are covered in Chapter 6.)

FIGURE 2-6 Command staff—Safety.

Public Information Officer

There is a need and a demand to interface with the media. The Public Information Officer (PIO) is responsible for this interaction with the media and other appropriate agencies. This function is implemented to relieve the IC of working with media, taking him or her away from command responsibilities. Media needs are real and must be met. Reporters need accurate and consistent information. When the IC is not able to handle both the incident and the media, the PIO position should be implemented. (See Figure 2-7)

A press (public information) area may need to be established. It should be away from the command post and all incident activities. Media representatives need to be made aware of its location and the importance for them to report there.

The media will want tours of the incident and photo opportunities. They need to understand which areas are safe and which areas are off-limits. It is essential that the press not go into unsafe locations. Equally important is that the members of the media not interfere with the incident activities. (Realize that some state laws allow wide latitude to the press and in many instances they cannot be restricted. It is important to be familiar with local requirements.)

The PIO acts as a central clearing point for the dissemination of information, reducing the risk of receiving conflicting information from multiple sources.

PIOs must coordinate all releases of significant information with the IC. They will decide on sensitive topics, such as the cause of the incident, victims' names, and any other information that should not (and does not have to) be released immediately to the press.

At some time during the incident, arrangements should be made for the press to have the opportunity to talk to the IC. The IC may have to transfer command of the incident for a few minutes to meet with the press.

Realize that if the fire department does not interact and release timely reports, the media will find sources that often are less reliable and can reflect poorly on the fire department.

Liaison Officer

A Liaison Officer is the point of contact for assisting or cooperating agencies. This function is assigned to prevent the IC from becoming overloaded by questions from the number of assisting agencies that some incidents attract. The Liaison Officer position usually is implemented at large or complex incidents. (See Figure 2-8)
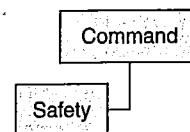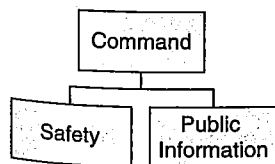

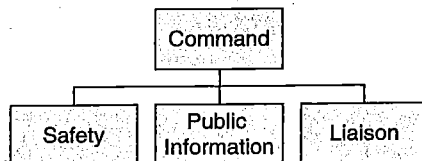**FIGURE 2-7** Command staff—Public Information.

FIGURE 2-8 Command staff—Liaison.

One of the most important responsibilities of the Liaison Officer is to coordinate the management of assisting or cooperating agencies. This is essential to avoid duplication of efforts. It allows each agency to perform what it does best. Liaison management provides lines of authority, responsibility, and communication, and increases the control necessary to provide for the safety of personnel from all involved agencies.

The Liaison Officer acts as a diplomat in cases when an agency lacks familiarity with ICS. The Liaison Officer can be particularly useful when agencies lack the joint training necessary to understand their involvement in the incident. Occasionally it becomes necessary to give strong direction to help agencies understand where and how they fit into the system. This may mean "telling" instead of requesting.

The agency representatives with whom the Liaison Officer interacts need to have decision-making authority, since the time delay of going through channels to get answers may have a negative effect on the needed coordination.

Liaison Officers need to identify a location for agencies to report in, to work, and to communicate with each other.

The appointment of a Liaison Officer eliminates the desire for other agencies to set up separate command posts.

Through the utilization of the Liaison Officer, issues of firefighter safety, authority, responsibility, and communications can be properly addressed.

Intelligence/Investigations Officer

The position of Intelligence/Investigations Officer can be initiated as a member of the command staff. This position is staffed by law enforcement at an incident where there may be criminal activity. It will be a critical position at any incident where it is suspected that acts of terrorism may be involved. (See Figure 2-9)

STAGING

The purpose of Staging is to provide a standard system of resource placement prior to tactical assignments. Staging assists in the control of units. Staging is a location from which units can be deployed within three minutes to address the strategy and tactics of the Incident Commander. (See Figure 2-10) With the exception of the first arriving unit, a unit without specific orders will automatically stage and await orders. Failure to use such a system will result in added confusion on the incident scene and units determining their own tactical assignments. When units bypass staging and commit themselves prior to being given an assignment, they determine their own objectives and often fail to achieve the goals of the Incident Commander. Command can lose track of these resources resulting in poorly applied resources, priorities being overlooked, the inability to oversee personnel safety, and a general lack of accountability. This form of freelancing will necessitate the Incident Commander to call for more resources to accomplish the necessary tasks to bring the incident under control. Units not given an assignment must report to Staging. Units that are not
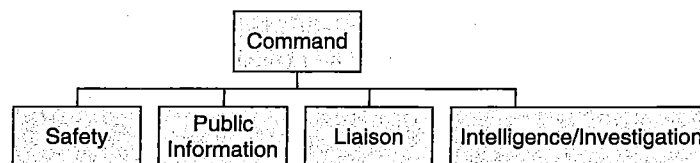

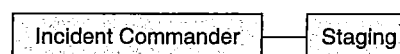FIGURE 2-9 Command staff—Intelligence/Investigations.

FIGURE 2-10 Staging is a location from which units can be quickly deployed at an incident.

needed at an incident can be quickly returned. Someone should be appointed as Staging Area Manager. Staging will report directly to the Incident Commander unless an Operations Section Chief has been implemented, in which case Staging will report to Operations.

Implementation of the staging function will enhance the overall operation. It has been documented that a tired firefighter is more prone to injury. The rotation of companies from Staging to relieve units who have been operating at the scene enables more firefighters to gain experience by performing various fireground operations and provides for well-rested firefighters.

Staging can be used in a variety of ways and at various levels. In cities and towns where streets are narrow and mobility is severely restricted, the use of level 1 staging has proven quite helpful. This is accomplished by having the responding units go to predetermined sides of the fire building, allowing coverage on all sides of the incident. Engine Companies in level 1 staging will then secure a water supply and notify the Incident Commander of their arrival and location. They are prepared to go into operation when and where ordered by the Incident Commander. Level 1 staging allows units to be situated early in the incident. This early deployment has units in place should they be needed without having to shut down large-diameter hose-lines and move other apparatus at a later time to position them. (See Figure 2-11)

Level 2 staging utilizes a specific location or marshaling area for units to proceed to and await further orders. It should be far enough from the incident scene so it won't interfere with the ongoing operation, yet close enough for immediate deployment of the requested units.

The initial Incident Commander determines the level of staging required. If he or she orders level 2 staging, a location for the staging area should then be designated. When level 2 staging is instituted, a Staging Area Manager should be assigned and will be responsible for managing all activities that occur in staging. (See Figure 2-12) The Staging Area Manager does not have to be a command officer. The use of a driver/engineer will suffice on smaller incidents. Larger incidents may require a company officer with assistance to track the larger number of units.

Staging is an area in which personnel and equipment can be deployed within a three-minute time frame.

POSITION	TITLE
Incident Commander	Command
Command Staff: Safety, PIO, Liaison	Officer
General Staff: Operations, Logistics,	Section Chief
Planning, Finance/Administration	Section Chief
Branch	Director
Division or Group	Supervisor
Strike Team or Task Force	Leader
Resource Unit or Medical Unit	Leader
Staging Area	Manager

GENERAL STAFF FUNCTIONS

In addition to Command, the general staff, sections, or major incident management positions (See Figure 2-13) include Operations, Planning, Logistics, and Finance/Administration.

FIGURE 2-11 Level 1 staging allows units to respond to a prearranged side of the fire building and to be prepared to go into operation if ordered by the Incident Commander. *Used with permission of Michael DeLuca.*
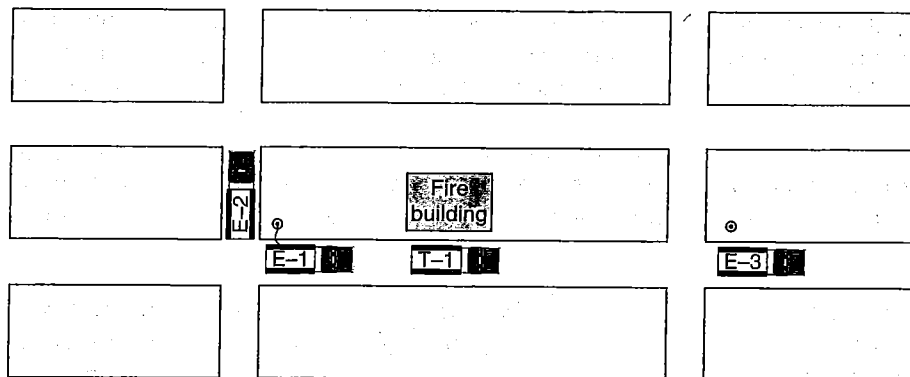
FIGURE 2-12 Level 2 staging utilizes a specific location or marshaling area for units to proceed to and await further orders. *Used with permission of Michael DeLuca.*
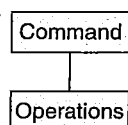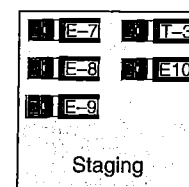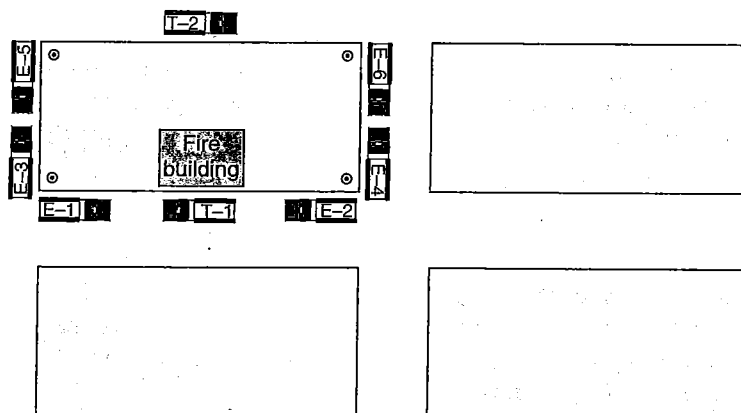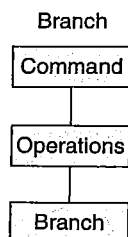
FIGURE 2-13 Operations.

FIGURE 2-14 Operations—Branch.

As discussed earlier, Intelligence/Investigations, at the discretion of the Incident Commander, could be assigned as a general staff position. Let's look at the general staff positions.

OPERATIONS

An Operations Section Chief should be designated when there is a great demand on the Incident Commander's time. (See Figure 2-14) Operations should not be appointed when doing so would mean that the only person reporting to Command would be that one individual, unless it is in preparation for an expanding incident. After Operations is implemented, the duties of the IC are modified. The IC will be responsible for the development of the incident objectives and strategies and the communication of that information to the Operations Section Chief.

The Operations Section Chief will run the operations portion implemented to mitigate the on-scene emergency. When Incident Commanders initiate this position, they will review with Operations the strategy and tactics already in place, their expectations, anticipated problems, and specific concerns.

The Operations Section Chief is responsible for the direction and coordination of all tactical operations. As a part of this overall responsibility, the Operations Section Chief also:

- Assists the IC in the development of strategies and tactics for the incident
- Directs and coordinates the overall tactical operations
- Develops operational plans
- Develops tasks and assigns units
- Develops a command structure that will report to Operations to handle the current and anticipated problems
- Requests or releases resources through the Incident Commander
- Consults with the IC about the overall IAP
- Ensures that the incident objectives are achieved
- Keeps the IC informed of situation and resource status within Operations
- Supervises the Staging Area Manager
- Supervises the Rapid Intervention Crew

The most common reason for staffing Operations is to relieve span-of-control problems for the IC. Such problems occur when the number of Branches, Divisions, or Groups, coupled with Planning and Logistic elements, exceeds the IC's ability to manage effectively. The IC may implement the Operations Section to reduce the span of control by transferring the direct management of all tactical activities to the Operations Section. The IC then is able to focus attention on the overall management of the entire incident as well as to interact with the command and general staffs.

The Operations position is usually delegated to someone already operating at the scene. A natural progression to this position can occur when a higher-ranking officer assumes Command. The officer relieved of Command can be assigned Operations.

For many departments, the position of Operations is a radical change. Before adopting an incident management system, the chief was always the Incident Commander and made all the decisions. With an incident management system, once the position of Operations has been created, the Incident Commander must give that person the latitude to handle those duties.

BRANCH

A Branch is an organizational level between Divisions/Groups and the Incident Commander or Operations. A branch can also be established under Logistics. Branches are managed by a Branch Director. A branch can be utilized as a functional, a geographic, or an organizational level for major parts of the incident operations. (See Figure 2-14)

At large-scale or complex incidents, the number of Divisions and/or Groups may create a significant span-of-control problem. When this occurs, the implementation of Branches should be considered. Branches can be utilized when a large number of resources are committed to a specific functional activity. A good example is a fire incident that also involves mass casualties. A Medical Branch can be implemented to alleviate this problem. Other examples include a Hazardous Materials Branch, or a branch for a geographic area of the incident scene. Once a branch is implemented the Branch Director will report to the Incident Commander, unless Operations or Logistics have been implemented.

An incident involving various agencies can be handled with a functional branch. An example is a natural disaster involving fire, police, and public works. In this scenario a Fire Branch, Police Branch, and Public Works Branch could be established.

A fully expanded Logistics Section could exceed the rule of five, and the Logistics Section could implement a Service Branch and a Support Branch to prevent exceeding a manageable span of control.

The specific responsibilities of a Branch Director include:

- Implementing the portion of the IAP appropriate to the Branch function
- Coordinating the activities of the Units within the Branch
- Evaluating goals and objectives and requesting additional resources, if needed
- Keeping his or her supervisor (either the IC, Operations Section Chief, or Logistics Section Chief) informed of the status in the Branch's area of responsibility
- Assigning specific tasks to Divisions, Groups, or Units within the Branch
- Resolving logistical problems associated with the Units deployed in the Branch

RESOURCES

Though national standards call for a minimum staffing of an officer and three firefighters, resources will depend on many factors. In most areas of the country, resources will consist of engine and possibly truck (ladder), heavy rescue companies, or other specialized units. These individual companies are commonly referred to as a single resource. The staffing of these units can vary from one firefighter to an officer and five firefighters. Naturally, the amount of work that can be accomplished will be determined by a combination of the personnel and their capabilities. The response of a limited number of firefighters will make it difficult to safely accomplish assignments at an incident. Some volunteer and combination departments permit their firefighters to respond directly to the incident scene. They assemble from two to six firefighters and classify them as a crew. The number of personnel should not exceed the recommended span-of-control guidelines. A common method of accountability is to utilize a member's name or the function that will be performed for the crew (e.g., Crew O'Malley or Vent Crew).

The National Fire Protection Association (NFPA) has standards that guide us in our operations: NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*, and NFPA 1720, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations and Special Operations to the Public by Volunteer Fire Departments*.

The National Institute of Standards and Technology (NIST) conducted a study to investigate the effect of varying crew size, first apparatus arrival time, and response time on firefighter safety, overall task completion, and interior residential tenability using realistic residential fires. It was based on NFPA Standard 1710. The results showed that the four-person crews operating on a low-hazard structure fire completed all the tasks on the fireground (on average) 7 minutes faster—nearly 30%—than the two-person crews. The four-person crews completed the same number of fireground tasks (on average) 5.1 minutes faster—nearly 25%—than the three-person crews. (April 2010, NIST Technical Note 1661, Report on Residential Fireground Field Experiments; the report can be found at: *www.nist.gov/bfrl/fire_research/residential-fire-report_042810.cfm*)

STRIKE TEAM

A strike team is specified combinations of the same kind and type of resources (apparatus and staffing) and has common communications with a Strike Team Leader. (See Figure 2-15) These can be any type of unit, though fire service apparatus typically consist of engines. At wildland fires, strike teams of dump trucks or bulldozers are common. A typical arrangement
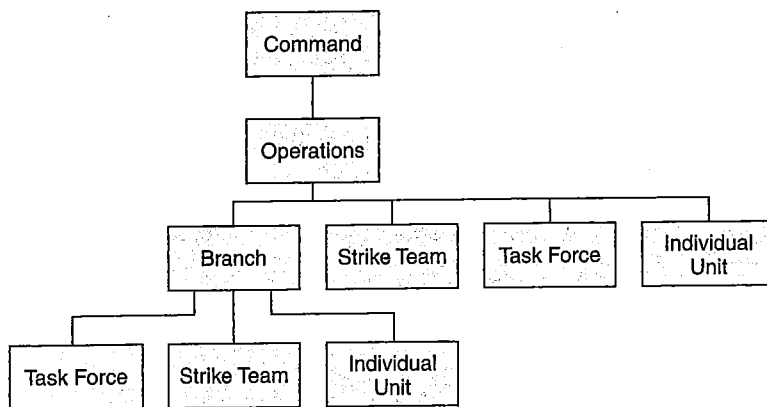
FIGURE 2-15
Operations—Strike Team/
Task Force/individual unit.

is to assemble five fully equipped and staffed engines with a chief officer as the Strike Team Leader. The Strike Team Leader will report to the Incident Commander or Operations for an assignment. This enables the Incident Commander/Operations to utilize five companies while needing to speak to only one person. At a large fire, three strike teams of engines could be operating in a division under Operations with only the three strike team leaders conferring with Operations. This would allow 15 engine companies to work in one area without exceeding the span of control of any supervisor and permitting common communications between the operating resources.

Realize that in locales with limited resources a strike team could consist of three engine companies with a Strike Team Leader.

TASK FORCE

A task force is a group of resources having common communications and a leader that may be pre-established and sent to an incident, or formed at an incident. The task force should not exceed five units. A common arrangement for structural firefighting is two engines and one or two truck companies with a chief officer as the Task Force Leader. Similar to the strike team, task forces allow many companies to operate within a division or group and still maintain an appropriate span of control while enhancing communications.

DIVIDING THE FIRE: ASSIGNING BRANCHES, DIVISIONS, AND GROUPS

By dividing an incident scene into sectors or areas, you are taking a problem and breaking it down into manageable segments. There is both geographic and functional sectoring. The terms can include branches, divisions, or groups.

Geographic sectoring allows the Incident Commander to take an incident scene, divide it, and place someone in charge of each area. Those individuals will then be assigned units to accomplish the tasks. They will be responsible for requesting additional resources from the Incident Commander or Operations and for giving timely progress reports. The model incident command system refers to geographic sectors as divisions. (See Figure 2-16) The National Incident Management System mandates the use of alphabetical sectoring. The alphabetical system starts with the front of the building being Division A.

Going clockwise around the building: Division B would be the left side as you face the building, Division C would be the rear, and Division D the right side. Some departments, to avoid confusion of letters sounding alike during radio transmissions, have adopted the use of Alpha, Bravo, Charlie, and Delta. Exposures can be referred to as exposure Alpha or exposure Bravo.

FIGURE 2-16
Geographic sectoring can utilize Division A-B-C-D to identify sides of the fire building or exposures. Adjacent buildings, such as a strip mall, can be denoted as D-2, D-3, or B-2, B-3, etc. *Used with permission of Michael DeLuca.*
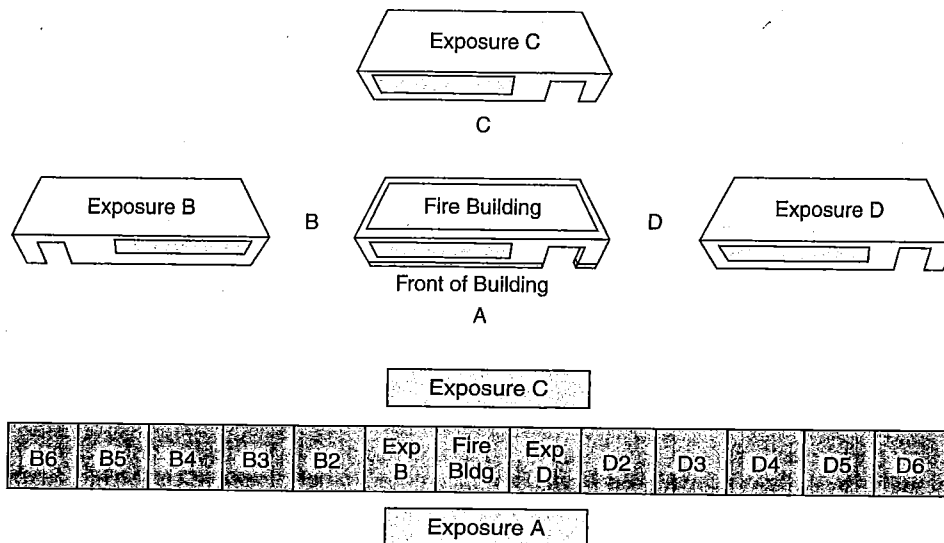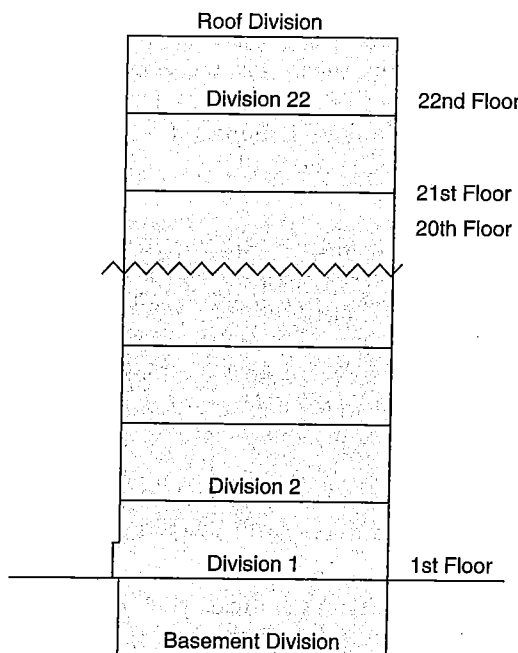

FIGURE 2-17 When dealing with multistoried structures, each floor can be designated a Division. *Used with permission of Michael DeLuca.*

When dealing with multistory structures each floor can be designated a division. (See Figure 2-17) This is especially effective when dealing with high-rise structures. The fifteenth floor would be Division 15, sixteenth floor Division 16, and so on. The units assigned to these divisions would accomplish all the needed tasks within their geographic area. This includes fire attack, ventilation, search and rescue, and overhauling.

Functional sectoring is the establishment of a group to accomplish a specific function. Functions could include, for example, ventilation and search and rescue. These teams would use the radio call letters "Ventilation Group" or "Search and Rescue Group."

As noted earlier a branch can be utilized as a functional, a geographic, or an organizational level for major parts of the incident operations.

A Branch Director, Division Supervisor, or Group Supervisor would be assigned the responsibility of accomplishing the assigned tasks.

FIGURE 2-18 Planning.

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          └──────┬───────┘
          ┌──────┴───────┐
          │   Planning   │
          └──────┬───────┘
                 │
                 ├──┤  Resource Unit      │
                 │
                 ├──┤  Situation Unit     │
                 │
                 ├──┤  Documentation Unit │
                 │
                 ├──┤  Demobilization Unit│
                 │
                 └──┤  Technical Specialists │
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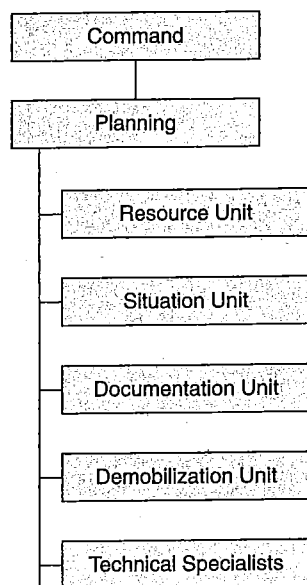
PLANNING

The Planning Section Chief is a member of the general staff and is responsible for the collection, evaluation, dissemination, and use of information about the development of the incident and the status of resources. The tracking of all personnel is critical for ensuring firefighter safety.

At a complex or rapidly escalating incident, the Incident Commander may need assistance in planning how to deal with the many and varied problems that may develop. An important function of the Planning Section Chief is the development of the incident action plan or modification of the present plan. (See Figure 2-18)

The Planning Section Units are Resource Unit, Situation Unit, Documentation Unit, Demobilization Unit, and Technical Specialists.
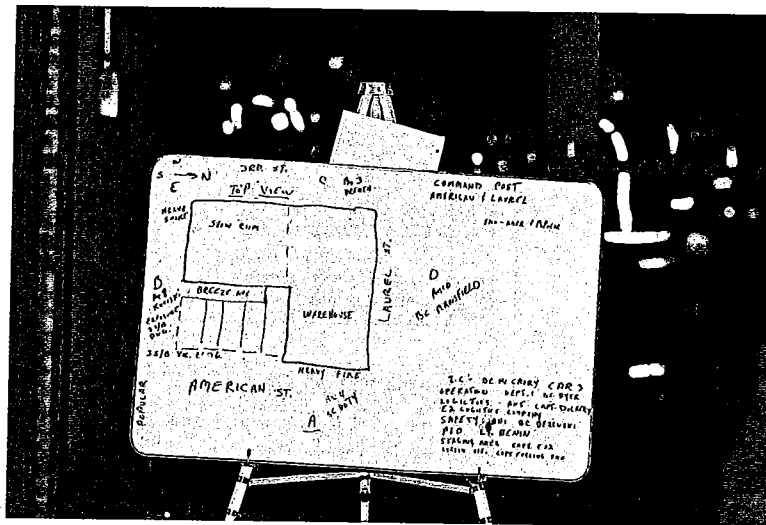
Resource Unit

The Resource Unit is responsible for the tracking of units committed to the incident and anticipating resource needs.

On most types of assignments, Planning maintains the situation and resource sheets. This typically is how Planning assists in most day-to-day assignments. These tactical worksheets or boards track units operating at an incident or in staging, and prevent critical details from being overlooked. The sheets can be separate or combined to show the relevant data. They should contain a rough drawing or plot plan of the fire area and any threatened exposures. This creates a picture for the Incident Commander that reflects the distribution of resources and shows where additional resources may be needed. A list of each unit dispatched and its operating location should be maintained. This is helpful when units are rehabbing or in staging. The list states who is the supervisor of each group or division, and the units assigned to each area. This ensures accountability of every unit. While reviewing situation and resource sheets, the Planning Section Chief may recognize that a need for rotation of personnel will be required or that sufficient resources are not available at the incident. Providing this information to the Incident Commander will assist in strategic development.

The charts should contain command assignments that allow you to see what functions have been delegated and those still retained by the Incident Commander. This can be reflected in the form of an organizational chart starting with the Incident Commander and continuing through each area of the incident management system that has been

FIGURE 2-19 Fireground charts are a tool. They do not require the perfection of an artist's drawing but rather the functionality of a discernible sketch. *Used with permission of Joseph Hoffman.*

instituted, showing functional responsibilities. This chart gives the Incident Commander the ability to make assignments or adjustments of needed tasks. If a Planning Section Chief is assigned, that person will be responsible for seeing that these charts are maintained. (See Figure 2-19)

Charts assist in the transfer of command to a higher-ranking officer during the escalation of a fire, in descending order when an incident has stabilized and is reverting to lower-ranking officers, or at the change of shift in career departments. Because the information has been committed to paper, there is less likelihood of important information being overlooked.

On complex incidents the role of the Planning Section can become quite involved including the preparation of an incident action plan. (See Chapter 3's coverage of the Incident Action Plan for additional information.)

Situation Unit

Major incidents of a technical nature (protracted hazardous material incidents, prolonged high-rise fires, wildland fires, etc.) may necessitate the need for predictions of likely outcomes and anticipated problems by the Planning Section. Though the number of times this is required is minimal, when needed it is a vital position. This will require the assigning of a senior officer.

Concerns of the Situation Unit are:

- What has happened?
- What is currently happening?
- What may happen?

Documentation Unit

The Documentation Unit records and protects all documents relevant to the incident. This includes incident reports, communication logs, injury claims, and situation reports. These reports are often utilized to present data at critiques.

Demobilization Unit

The Demobilization Unit is responsible for developing a plan for the demobilization of the resources committed to an incident and assisting in the implementation of that plan. This plan allows an orderly and logical method of releasing units from the scene. It should consider the length of time units have been at the scene, the physical condition of the personnel, and any mutual-aid agreements that need to be considered. Proper demobilization is dependent on adequate planning.

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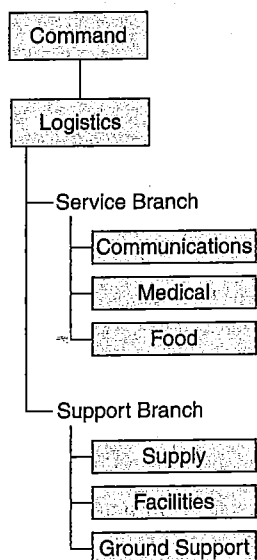incident. (
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FIGURE 2-21 Logistics.

Technical Specialists

The Planning Section Chief may interact with technical specialists who can provide insight on an operation. (See Figure 2-20) Technical specialists are individuals with skills or knowledge that may be applied to support incident operations. Examples include building maintenance engineers, meteorologists, industry representatives, or private-sector chemists. Information obtained by the technical specialists should be shared with the Incident Commander.

LOGISTICS

The Logistics Section Chief is a general staff position. (See Figure 2-21) The responsibility of the Logistics Section Chief is crucial in keeping units supplied during a major incident. Complex assignments can present a variety of demands, often within restricted time frames. The number of units needed for logistical assignments can match or exceed those assigned to suppression or mitigation efforts. The Logistics Section Chief must work closely with the Incident Commander and the Operations Section Chief.

Routine incident scene needs can include:

- Water supply
- Foam at a flammable liquid fire
- Resupplying of air for self-contained breathing apparatus
- Refueling or repairs to apparatus
- Caches of emergency medical supplies at a mass casualty incident
- Specialized equipment

Wildland fires and all hazard incidents can place a high demand on logistics to provide facilities, services, and materials for the incident, including setting up large camps with sleeping, eating, and bathing facilities. The wildland fire may require the acquisition of vehicles to provide water for both ground and air operations.

> A ratio of two logistic companies for each unit involved in suppression at a working high-rise fire is a reasonable consideration.

Since a fully expanded Logistics Section can include Communications, Medical, Food, Supply, Facilities, and Ground Support, this expansion exceeds the accepted rule of five persons being supervised as dictated by ICS. For this reason, the Logistics Section can be divided into two branches, the Service Branch and the Support Branch.

Service Branch
The Service Branch is responsible for service activities at incidents. These activities include communications, medical treatment for incident personnel, and provisions for feeding operating forces. The Service Branch is managed by a Branch Director and contains three functional Units: Communications, Medical, and Food.

Communications Unit   Large incidents involving numerous mutual-aid companies may require a communications plan. The Communications Unit develops this plan and can utilize ICS Form 205, Radio Communications Plan to document and distribute the plan.

If necessary they can distribute communications equipment, supervise the communications network, and maintain/repair communications equipment.

Medical Unit   The Medical Unit is responsible for providing emergency medical treatment for emergency personnel. This unit does not normally provide treatment for civilians.

There is often confusion that the Medical Unit comes under Logistics and not under Operations. ICS was designed originally for wildland fires. There was normally not a civilian problem, and medical needs were for the emergency responders. Realize that on structure fires or other types of incidents, an EMS group may be assigned to treat civilians and will report to Command or Operations if established.

Responder rehabilitation (rehab) will be provided by the Medical Unit. It includes medical evaluation and treatment, food and fluid replenishment, and relief from extreme climatic conditions for emergency responders, depending on the circumstances of the incident.

Large incidents may require a Medical Plan. The Medical Unit develops this plan and can use ICS Form 206 Medical Plan to document and distribute the plan.

Food Unit   Providing meals and drink for personnel involved in an incident is the responsibility of the Food Unit. This may be a significant logistical task at major incidents, and could be necessary at relatively minor incidents during extended operations.

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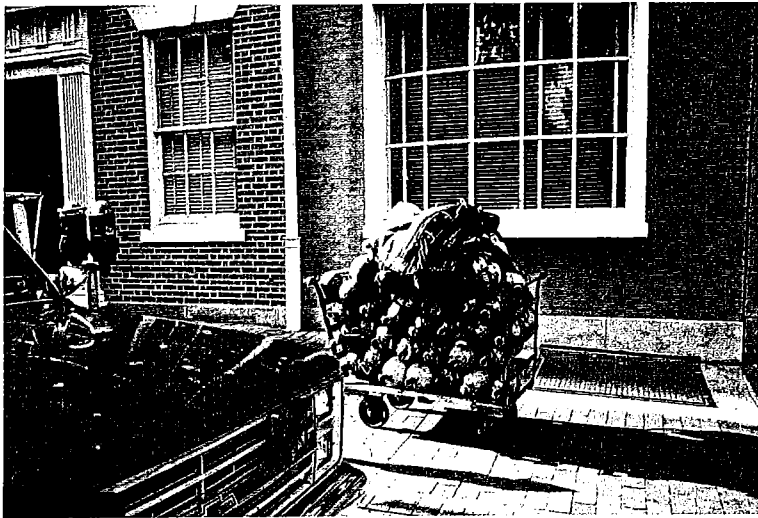are perfor
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FIGURE 2-22 Many demands can be placed on logistics. Large-scale incidents will require resupplying of air cylinders for self-contained breathing apparatus. *Used with permission of Joseph Hoffman.*
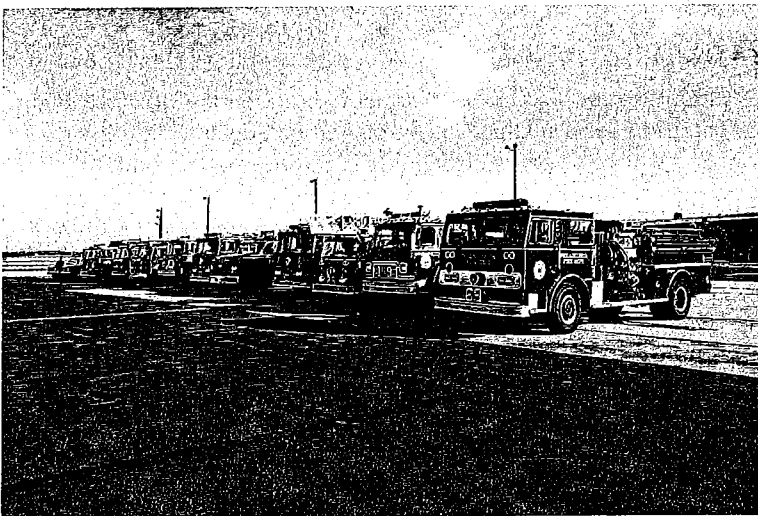

FIGURE 2-23 Base should be a safe distance from the incident scene, and units will not be readily deployable. *Used with permission of Joseph Hoffman.*

Support Branch

The Support Branch is responsible for providing the personnel, equipment, and supplies to support incident operations. These activities include supply, provision of fixed incident facilities, and ground support (such as fueling and maintenance of equipment). The Support Branch is managed by a Branch Director and can contain three functional Units: Supply, Facilities, and Ground Support.

Supply Unit The Supply Unit orders the equipment and supplies required for incident operations and maintains ongoing inventory and control of these resources. Equipment and supplies may include additional self-contained breathing apparatus (SCBA) cylinders, specialized equipment required for a hazardous materials spill, or expendable supplies, such as breathing air or foam concentrate. (See Figure 2-22)

Facilities Unit The Facilities Unit provides fixed facilities for an incident. Most often, fixed facilities are required for incidents of long duration, and may include the Incident Base. The Base serves several functions: It is the location where primary support activities are performed, and it serves as a reporting and marshaling area for resources. Base is not commonly used at structure fires. However, it may be used during wildland fires, hazardous materials incidents, or high-rise incidents. (See Figure 2-23)

FIGURE 2-24 Finance/
Administration.

FIGURE 2-24 Finance/Administration.
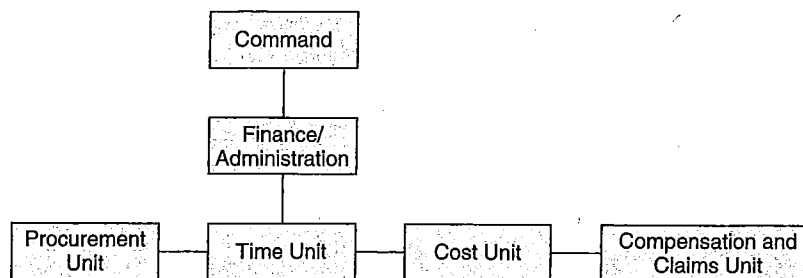
Other fixed facilities include feeding and sleeping areas, sanitary facilities, and a formal Command Post (CP).

Ground Support Unit The Ground Support Unit is responsible for fueling and maintenance or repair of vehicles, transportation of personnel and supplies, and preparation of an Incident Traffic Plan. The Traffic Plan, if necessary, is used to facilitate the flow of apparatus and equipment within the incident area and can be included in a written incident action plan.

FINANCE/ADMINISTRATION

The Finance/Administration Section is a part of the general staff. (See Figure 2-24) The Finance/Administration Section Chief's position can be implemented at a major incident or one where a major cost recovery is evident. This position ensures the tracking of expenditures and the proper documentation of anticipated costs. A major function of this section is to document the financial costs of the incident to keep the Incident Commander apprised. The person most qualified to handle this assignment may be the city or county finance officer. In addition to wildland fires and hazardous materials incidents, there have been attempts to recover the costs of firefighting when a fire occurs due to violation of a code or ordinance.

Finance/Administration can include the following units: Time Unit, Procurement Unit, Compensation and Claims Unit, and Cost Unit.

Time Unit
The Time Unit is responsible for equipment and personnel time recording. This will allow for the proper payment for these services including overtime accrued.

Procurement Unit
The Procurement Unit is responsible for administering all financial matters pertaining to vendor contracts, leases, and fiscal agreements.

Compensation and Claims Unit
The Compensation and Claims Unit is responsible for the overall management and direction of all administrative matters pertaining to compensation for injury and claims-related activities (other than injury) for an incident.

Cost Unit
The Cost Unit is responsible for collecting all cost data, performing cost effectiveness analyses, and providing cost estimates and cost-saving recommendations for the incident.

IMPLEMENTATION OF THE SYSTEM

An incident management system can be correctly implemented in numerous ways. It is a system that should and must be used by firefighters on routine or everyday types of incidents. This will ensure that implementation becomes second nature when confronted with a major incident.

Realize that there many correct methods of implementing an incident management system and being fully compliant with the system, but being fully compliant

and designing a system that is workable on an incident can be two different things. That is especially true with fire departments that implement only groups and not divisions for structural fires. A common arrangement is a fire attack group, a search-and-rescue group, and a ventilation group. On a one-story structure this system will work fine. If you never have any structures taller than one-story it will probably not need to be changed in any way. The problem is in areas where all structures are not one-story and if the next fire response is to a three-story dwelling or a three-story motel it will not be as successful. Fire Attack Groups are a function and are not defined geographically, so in reality sending a fire attack group into the burning three-story motel with fire burning to some degree on all three floors would make them responsible for all floors. Supervising firefighting on three floors is unworkable for one supervisor.

Fire departments could initiate different systems depending upon the type of response (groups for one-story structures and divisions for multistoried structures). The problem is that we are taught to be consistent, and the system that we use daily is the system that we will try and employ at most structure fires. We may recognize that on a high-rise response that we need to adjust our system, but most fire departments will try to implement the system that they use on a daily basis.

A much better way to implement the system is to create a division for each floor and a ventilation group. The typical structure fire in a one-story dwelling will utilize a very basic system. (See Figure 2-25) There will be an Incident Commander, a Division 1 that will handle everything on the interior, and a Ventilation Group to handle ventilation. The Division 1 supervisor would be assigned sufficient resources for fire control and search and rescue. He/she would need to coordinate both operations.

A fire in a three-story nursing home that requires numerous rescues to be made, fire attack, and ventilation demands an expanded system to handle the problems. This may necessitate a Division 1, Division 2, Division 3, and Ventilation Group. The fire attack and search-and-rescue are handled by the individual divisions. Command needs to provide sufficient resources to each division or group to enable the completion of their assignments. A fire of this magnitude may include the implementation of Operations, Planning, Logistics, Safety, and other positions. (See Figure 2-26)
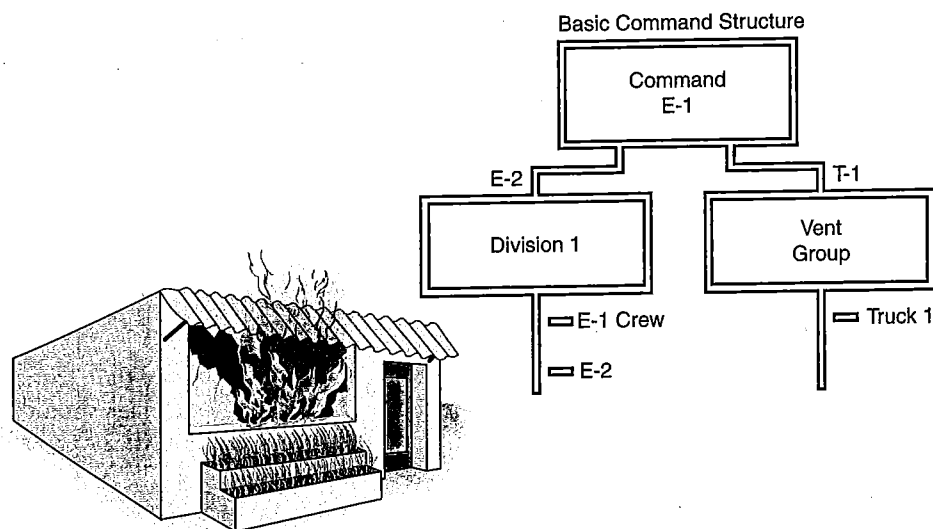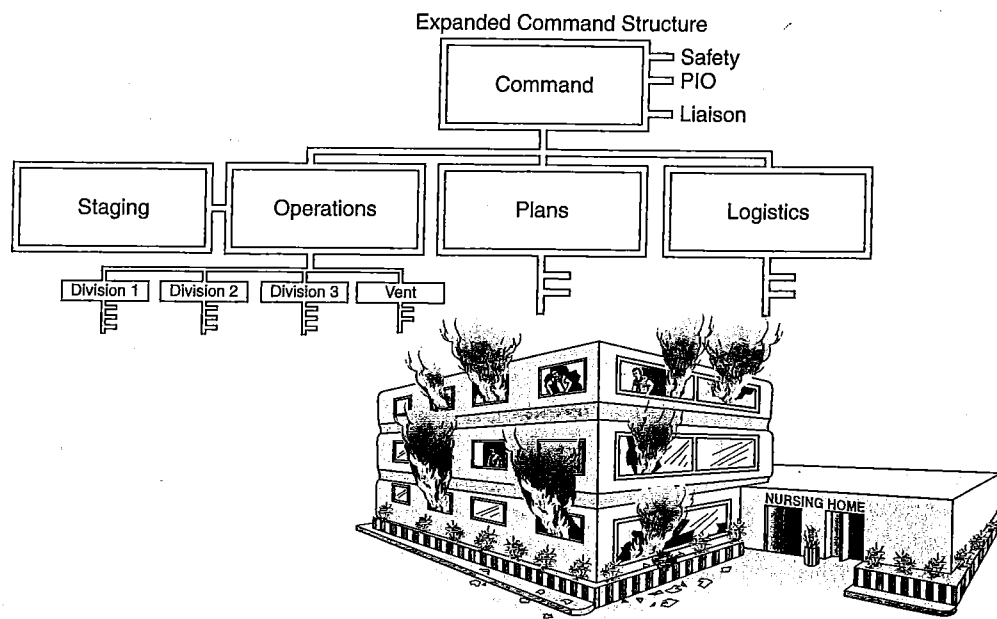

FIGURE 2-25 A typical structure fire will utilize a very basic command structure. *Used with permission of Michael DeLuca.*

FIGURE 2-26 A fire
involving a complex
situation will demand
an expanded command
structure, as shown in
this nursing home fire.
*Used with permission of
Michael DeLuca.*

Expanded Command Structure

Incident Scene Control

For the incident management system to function properly, there are certain steps that are required to ensure a successful outcome. The first arriving officer at an incident scene must assume Command. This is called **incident scene control**.

incident scene control
■ A method used to assure that all units are operating within a plan that ensures a safe and successful conclusion to the emergency.

ESTABLISHING COMMAND

When Command is first established, dispatch should be notified. An example is "Dispatch from Engine 1. Engine 1 will be Broad Street Command." This accomplishes a number of tasks. It notifies dispatch and other units that Command has been established, it tells which unit is in Command (Engine 1), and where Command is positioned (Broad Street).

This action places the responsibility for the management of the incident scene on the Incident Commander. The function of Command must be present at every incident. Someone must be in charge or chaos will result. The absence of Command allows for indecision and duplication of effort. Certain fireground tasks can be overlooked. Units will establish their own priorities.

Command must be initiated at all incident scenes. The everyday practice on minor fires allows for a smooth transition to a major incident. Once Command is established, its continuity must be maintained. A system must be in place to allow for Command to be transferred to a higher-ranking officer. Some systems require that the senior officer must assume Command upon arrival at an incident. A better method is allowing the higher-ranking officer the latitude to take Command or let the current officer maintain it.

ASSUMING COMMAND

As higher-ranking officers arrive on the scene, they must decide whether to assume Command. Upon arrival and prior to transferring Command, that officer should visually size up the incident scene. This size-up should be conducted as if that officer were the first officer to arrive.

■ What do you see?
■ How would you attack the fire if you had been the initial Incident Commander?

- What fire department actions are taking place?
- Are these actions consistent with the problems observed?

The officer, after performing the size-up and discussing the scene with the current Incident Commander, will decide whether to assume Command. An expanding incident may require a higher level of experience, necessitating a transfer of command.

Whether the higher-ranking officer assumes Command or allows it to remain with the present officer, he or she still assumes the responsibility of the scene. Some have the misconception that if Command is not formally transferred, then neither is responsibility. This is erroneous; you cannot disavow responsibility.

TRANSFER OF COMMAND

If a decision to assume Command is made, then there should be a formal transfer of Command. (See Figure 2-27) This change should not occur prior to a transfer of critical information and will require notifying dispatch and units via radio. The officer assuming Command must have a handle on:

- What has happened
- What is occurring now
- The anticipated problems

Depending on resource availability, the Incident Commander being relieved may stay at the command post for a time after the transfer of Command. This assures the new Incident Commander that if any information has been overlooked during the transfer of Command, it is readily available.

The reasons for not assuming Command can vary. There would be no need to transfer Command if all major decisions have been made and the current Incident Commander has the situation well under control. A complex incident often necessitates much time in the transfer of information. In this instance, the higher-ranking officer can assume Command and keep the officer who has been relieved to assist until he or she gains familiarity with the incident.

This knowledge or transfer of information must occur before a good transfer of Command takes place. It should be noted that it is unfair to allow a low-ranking officer or an officer with little experience to remain in Command of a very complex incident.

FIGURE 2-27 If a decision to assume Command is made by a higher-ranking officer, then there should be formal transfer of command. *Used with permission of Joseph Hoffman.*

Permitting a junior officer to remain in Command with supervision from a higher-ranking and more experienced officer is an excellent way of developing fireground command skills and future chief officers. If a problem occurs, the junior officer can make the decision or "call the shots." If he or she is about to make a critical mistake or seems befuddled, the senior officer can give assistance.

When transfer of Command does occur, there should be a standard procedure to be followed. The Incident Commander should use situation and resource forms to allow a much easier transfer, with a review of the command structure and the units assigned to each function, the strategies that are in place, and the tactics and tasks that have been implemented.

For an incident management system to function at peak efficiency, each firefighter involved must contribute to the overall success of an operation. The first-arriving officer at an incident, after sizing up the situation, has many decisions to make. He or she must decide whether to set up a command post and assume Command or if active participation in the incident can have a greater impact.

If the first-arriving officer decides that getting physically involved in the initial stages can save a life or prevent a minor fire from becoming a major incident, he or she can notify dispatch of this decision and pass Command to the next-arriving officer.

PASSING COMMAND

Passing Command allows some latitude to the first-arriving officer. When units are responding from a great distance, it will take considerable time for the next unit to arrive on scene. The first-arriving officer may need to become physically involved. Under fire or emergency conditions, it will be impractical if the first engine to arrive is staffed with only two or three firefighters, and one of them sets up a command post and assumes Command while a person in need of immediate rescue is not tended to.

Passing Command is an option of the first-arriving officer. Should the first officer take this option, dispatch should be notified and Command must be assumed by the next officer to arrive at the scene. This must occur to ensure that this vital position is staffed.

MOBILE COMMAND

Some fire departments, due to closely aligned stations and rapid response of a chief officer, permit the first-arriving company officer to assume Command, yet remain mobile.

To accomplish this, the first-arriving officer:

- Gives an initial status report
- Gives orders for the incoming units (either specific orders or those units will go to level 1 staging)
- Identifies and assumes Command

Mobile Command works well for fire departments where the chief officer arrives practically at the same time, or a minute or two after the arrival of the initial unit. Realize that until the officer who is a mobile Command transfers command to another fire officer, or chief officer, he or she still has the responsibilities of any Incident Commander.

In fire departments that utilize Mobile Command and the chief officer will be delayed, the chief can notify dispatch of his or her delayed status, and the next-arriving company officer will assume Command as if Command was passed.

COMMAND POST

A command post provides the Incident Commander a stationary position from which to Command the incident. (See Figure 2-28) It is essential when multiple companies are operating and its importance increases as the incident grows in complexity. Its location

should allow the Incident Commander to be easily located. It gives the IC a location to assemble staff and other resources. It is a place where management functions occur to bring an incident under control.

The command post collects and disseminates information. It is a place where decisions are made, strategies developed, and orders given. It offers shelter from the elements, light for nighttime operations, and a place where reference books can be utilized.

The actual size of the command post will be dictated by the needs of each incident. As functions and incident demands increase, the command post will increase accordingly. Caution must be taken to prevent overloading. This can occur if unneeded personnel are allowed to gather there.

The selection of where to locate the command post should consider a vantage point from which to view the incident. If possible, a good location is in front of the fire building or incident scene with a view of the front and the more critical of the two sides of the structure or the direction toward which a fire may spread. This will be predicated on a number of factors, such as the accessibility of the command vehicle as well as fire and smoke conditions encountered. If apparatus are operating at this location, a high noise level may prohibit use of this site for the command post.

A vantage point allows the Incident Commander to compare reports received from the divisions or groups with his or her personal experience and knowledge. This is especially helpful when receiving conflicting reports, such as an interior division reporting that a fire is knocked down and a roof division reporting continual or increasingly heavy smoke and heat conditions. Conflicting reports need to be assessed by the Incident Commander, and a view of the building can assist in this evaluation.

A command post can utilize a chief's vehicle, a special communications vehicle, or a nearby building. The location of the command post should be communicated to dispatch, to the units operating at the scene, and to incoming units. The command post location should be indicated by a special recognizable designation. This could be a flag or special-colored light.

Status Reports

The successful organization is one that can quickly assimilate into the various types of emergency situations that fire departments are called to daily.

INITIAL STATUS REPORT

When responding to an emergency, a duty of the first-arriving company officer is quickly to assess conditions and give a report of the fire conditions to dispatch. Some departments keep a plastic laminated card with the required information for the initial and subsequent reports in the cab of all apparatus. This card is always in clear view of the officer.

This initial **status report** should start off with a repeat of the address where the fire is located. This can differ from the dispatched location. Accurate addresses need to be given. Most cities and towns have a standard practice in which addresses are assigned to specific directions. For instance, all odd-numbered addresses will be on the north and east sides of the streets; all even-numbered addresses will be on the south and west sides. This allows responding units to determine which side of the street the fire building is located on, thus assisting proper response and apparatus placement.

Initial status reports differ from department to department. A comprehensive report accomplishes many goals. It forces the first-arriving officer to review the basic points of size-up, such as life safety, number of stories, and size and construction of the building, as well as fire conditions on arrival. It may be a requirement of the initial status report to contain orders for all responding units. This could be detailed orders of specific duties or general orders, such as for units to proceed to Staging.

An example of an initial status report is, "Dispatch from Engine 4. We are on location at 123 Maple Street. We have a two-story frame dwelling approximately 75 feet by 25 feet. There is heavy fire involving the first floor on Charlie side. There is a report of people trapped. Have the first-due truck prepare for rescue. Have the second-due engine stretch a supply line and a 1¾-inch hose-line to back up Engine 4. Engine 4 will be Maple Command. Strike out a second alarm and dispatch a medic unit. Staging will be located one block east on Maple."

When giving the dimensions of a structure, always give the width and then the depth of a building. This standardized procedure allows responding units to better visualize the property.

A comprehensive report benefits everyone. It allows dispatch to get a full picture of the incident scene. The responding chief officer can start initiating strategy en route, since a thorough report allows the chief to envision the magnitude of the problem. If the situation *may* require additional resources, they should be requested. When it's not clear whether more resources will be needed, the axiom "It's better to have them and not need them, than to need them and not have them" dictates. Firefighters realize the importance of being prepared for the nuances of a changing fireground situation. They know the need for staging and the necessity of having rested personnel readily available to relieve other crew members or in the event that other problems should occur.

Dispatch can utilize the status report to prepare for move-ups or cover-ups of companies, to notify mutual-aid companies of the situation, or to pass along information to senior officers who may have response duties. It also establishes command at the scene and informs everyone who is in command.

status report ■ Report prepared by the IC to assess fire conditions for dispatch; helps fulfill initial and ongoing demands of constantly sizing up and reporting incident scene conditions.

> Move-ups or cover-ups occur during a working fire when dispatch relocates other units to those stations that have been vacated by the fire response in preparation for additional dispatches in those now vacant areas, or to prepare for additional alarms should they be requested by the Incident Commander at the working fire.

Responding units will be given specific assignments en route or report to Staging. This allows certain assignments to be known prior to arrival with no loss of time. It prevents freelancing and assists in firefighter accountability and overall incident scene safety. Firefighters can adjust their thought process to the particulars of the incident. Knowing what orders are being given to responding units, they can anticipate areas still needing to be addressed. When the units in Staging are needed, they can then move to the correct location to perform their assignments.

Typical Initial Status Report Data
- Address
- Type of building
- Size and stories
- Fire conditions
- Disposition of the occupants
- Exposures
- Orders for the responding units
- Identify Command
- Assume Command
- Request additional units if needed
- Announce a location for Staging

ONGOING STATUS REPORT

Just as size-up is an ongoing process that demands constant evaluation of changing conditions and adjustment of strategies and tactics accordingly, the ongoing status report should be a part of the standard operating guideline. Requiring it at timed intervals is a method of alerting the Incident Commander that a specific amount of time has elapsed since the previous report and that if the size-up hasn't been updated, he or she should do it now. A good time frame for the required status reports is at ten-minute intervals until the fire is under control. The ongoing status report can follow the basic format of the initial report with the omission of the preliminary information as it pertains to the site and construction of the fire building. An ongoing status report may sound like:

"Dispatch from Maple Command. Battalion 2 is now Maple Command. We have heavy fire conditions on the Charlie side of the fire building. It appears at this time that we will be able to confine the fire to that area. We are in the process of opening walls and ceilings to expose hidden fire. All occupants have been accounted for. One has been transported via Medic Unit 2 to the hospital. We are now operating with two engines and two trucks and have one engine in Staging. Dispatch another medic unit to the scene."

Ongoing status reports allow ICs to review their size-up and determine if the present strategy and tactics are accomplishing what was hoped. If not, they can make modifications. By addressing what companies are committed, they know how long these units have been operating and whether they need relief.

ICs must remain proactive in their approach to handling the incident. Resource needs may change due to the extension of fire or prolonged operations requiring rotation of personnel.

Typical Ongoing Status Report Data
- Any information that was not available for the initial report
- Current conditions of the fire and the disposition of the occupants
- Specific units operating at the scene
- Units in Staging

FINAL STATUS REPORT

A final status report should be given at the time a fire is placed under control. The best description of "fire under control" refers to a situation in which the life and safety of civilians has been assured, no additional extension of fire will take place, and normally no additional firefighting forces will be required to respond at emergency speed. This could be a scene still requiring a lengthy time commitment for the fire department, including the relief of the personnel at the scene, but it means that the scene is stabilized.

The final status report will give an overall report of current fire conditions and how long the remaining units will be on the scene if that information is known. A typical report is: "Dispatch from Maple Command. Place the fire under control. All visible fire has been knocked down. Engine 17 is being relieved by Engine 4. Engine 4, Truck 2, and Medic 5 will be remaining at the scene for overhauling and salvage. They will be here approximately one hour. Engine 4 will be Maple Command. Battalion 2 is available for service."

Status reports help us fulfill the initial and ongoing demands of constantly sizing up and reporting conditions at the incident scene. When done in a professional manner, they help improve our overall operation.

> The term *fire under control* refers to a situation where the life safety of civilians has been determined, and that no additional extension of fire will take place, and normally no additional firefighting forces will be required to respond at emergency speed. This could be a scene still requiring a lengthy time commitment for the fire department, including relief of the personnel at the scene, but it means that the scene is stabilized.

Typical Final Status Report Data
- Current conditions
- Final disposition of occupants
- Units remaining at the scene
- Units preparing to leave the scene
- Approximate length of time units will remain on the scene
- Transfer of Command to a lower-ranking officer

COMMUNICATIONS

Communications is a critical component of every operation. Communications is the giving and receiving of information, the backbone of any emergency response organization. Because our decisions are based on the information that we receive, we must attempt to obtain accurate data as quickly as possible. This includes feedback on the progress being made by Division and Group Supervisors. Are they being effective in what they are attempting to accomplish? Do they need more resources? Can they complete their assignments? Has the situation changed, whereby their present course of action is no longer feasible? When communications are planned for and carried out properly, the overall incident will benefit. The Incident Commander must control communications and request regular updates from each division and group.

Reporting Problems and Solutions

A breakdown in communications seems to be consistent with seemingly unsolvable operational problems. An invaluable part of communication occurs when problems are discovered. The person reporting those situations must not only describe the problem but also offer potential solutions. An example is: "Command from Charlie Division. We have fire extending to the exposure on the Charlie side. I have Engine 30 stretching a line into the exposed building. I will need another engine and truck company to assist them." This message tells Command what the problem is and what resources are needed to solve it. If only the first part of the message is given, Command will then need to ask questions to establish the extent of the problem and the needed resources.

> An excellent method for the Incident Commander to determine conditions is to receive "CAN reports" from units operating on the incident scene which contain:
> Conditions – what conditions they have found in their respective areas
> Actions – what actions are currently being performed and what is required to mitigate the conditions found
> Needs – what resources are needed

Call Letters

Communication is enhanced through the utilization of appropriate call names. Many departments still use their assigned unit number after arriving at the incident and being given an assignment. Once designated as a Division or a Group Supervisor, the radio call sign must be the area or function assigned. Using the area or function (and not the unit number) allows everyone operating on the appropriate radio frequency to know which functions have been implemented and the conditions being reported from that assignment. An example is: "Command from Vent Group. We have completed vertical ventilation," or "Command from Division 2. The primary search is completed, and we are making good progress in controlling the fire." Both of these messages describe either a location (the roof or the second floor) or activity (ventilation or search/rescue and confinement). It does not matter who the units are, but the important fact is that everyone monitoring the radio knows what is happening and where it is occurring.

Face-to-Face Communications

A good communicator can read the body language of a person giving or receiving a message if face-to-face with that individual. These nonverbal messages can be expressions or gestures and must be interpreted properly by the receiver. An example of body language or gestures that a firefighter can make when receiving an order is a frown or quizzical look, indicating that he or she does not understand the order or has reservations about the order being given. The repeating back of the order by the firefighter receiving the order ensures that it has been received. Further questions can clarify if it has also been fully understood. If it has been understood, yet body language is expressing a hesitation on the part of the firefighter, it may be wise to ask if he or she foresees a problem carrying out the order or has a better method to accomplish the task. Naturally, this is dependent on time factors and in no way implies that giving orders at an incident scene is better performed by participative management practices. This whole process should take only a matter of seconds.

Departmental Radio Procedure

A good radio procedure should encourage the use of face-to-face dialogue when possible and should restrict unnecessary radio communications. This allows sufficient time for broadcasting important messages.

Radio usage policy can include:

- The receiver will acknowledge the receipt of an order.
- When an assignment has been completed, this information will be given to the person originally issuing the order.
- If unable to complete an assignment, the reason will immediately be given to the person issuing the original order (insufficient personnel, safety condition preventing it, etc.).
- Be prepared to give a progress report, if requested.
- Immediately report to the Incident Commander if a safety factor is discovered that can impact on the overall operation or firefighter safety (serious structural crack in a wall, a buildup of water on a floor in a building, etc.).

Emergency Transmissions

Large incident scenes will still demand a high degree of radio traffic. A method must be in place to clear a radio band if an important message has to be given. This may be necessary if a company or firefighters find themselves in jeopardy or if a serious occurrence happens that the Incident Commander must be made aware of immediately. One method that can be used is by requesting "emergency traffic" or stating "Mayday." An example is: "Emergency traffic! Command from Engine 1!" Command can then recognize the message and have Engine 1 proceed with its message. The term *Mayday* is used to indicate that a firefighter is in trouble. These messages alert everyone to clear the frequency to allow transmission of the important message. Another way to get an important message recognized can be through the use of the word "Priority." This allows a unit using this signal to receive prompt recognition of its call letters; the message is of importance but not an emergency situation. An example is: "Priority! Command from Engine 1." When "Mayday," "emergency traffic," or "priority" is used, all other units must keep off of the radio to allow the important message to be given.

The use of numbered codes has drawbacks, especially on interagency responses, and should not be used. Messages should be concise. Effective communications allow other agencies to understand our specific needs.

It must be assumed that an order given via radio that has not been acknowledged has not been received. The receiver must confirm messages and seek clarification if an order is unclear.

Radio Protocol

Many fire departments have changed how they send radio messages. In the past, most departments stated their own call letters and then the call letters of the person they were calling ("Engine 1 to Command," or "Command to Dispatch"). They found that the person receiving the call heard his or her own call letters but many times did not hear who was calling them, resulting in additional radio traffic. A more effective method in use today places the unit being called first and then the unit sending the message ("Dispatch from Engine 1," or "Command from Division 1"). The unit being called is alerted and listens for who is trying to make contact. This method has been found to reduce unnecessary radio communications.

Cellular Phones

Communications can be enhanced by the use of cellular phones. They allow ready access to dispatch on a relatively unmonitored line. Cellular phones can be used to contact outside agencies, such as the Chemical Transportation Emergency Center (CHEMTREC), to provide technical information on transportation accidents. Some departments are now using them as a command channel on major incidents. They allow the Incident Commander an avenue to talk to Division and Group Supervisors without interfering with radio transmissions.

Summary

Utilization of an incident management system is an endeavor that must be planned and practiced. The Incident Commander must develop a structured organization to address the many and varied problems that occur.

For a system to be effective, everyone must be familiar with it. This can be accomplished only through adequate training sessions for all members. This should include using scenarios that allow expansion of the system from a minor incident to a major disaster. Ensuring that proper procedures become instinctive under the stress of emergencies can occur only through training and constant application of the system. Operations will be better organized. Assignments will be well defined. Communications will flow up and down the organizational structure. All members will know what is expected of them. Problems will be recognized and addressed, and a strong emphasis will be placed on firefighter safety.

When a command system is expanded and assignments are given, those individuals do not operate independently. Coordination and communications are demanded to ensure firefighter safety. There must be discussion on the progress being made and the problems that must be overcome. Through these discussions, solutions can be found and required adjustments to strategies made.

A department that communicates well eliminates the problems of units duplicating assignments. Good communications allow the assigning and tracking of personnel and assist the Incident Commander in recognizing when relief of units will be needed.

Build on your strengths and work on weak areas to develop them into strengths. Recognize what is possible. Consider the resources available and their capabilities.

Real organization will be found in the acts of those in Command and the coordinated efforts of those being commanded.

Review Questions

1. How well does your fire department interact with your mutual-aid companies in regards to implementing an incident management system? Are you in agreement in all areas? Or are there some areas in which your departments operate differently?
2. Discuss a past major incident in your department. What areas of your incident management worked well? Which areas have room for improvement? What specific steps would you take to improve these areas?
3. What factors should the Incident Commander consider when expanding the positions in an incident management system?
4. What are the eight basic components of the incident command system that provide the basis for an effective ICS concept of operation?
5. Describe how Unified Command should be handled at a major incident involving your fire department and a number of outside agencies at a passenger plane crash in your response district.
6. List the general staff and command staff positions in the Incident Command System.
7. What are the six components of the National Incident Management System?
8. What are the responsibilities of the Incident Commander?
9. What are the responsibilities of the Operations Section Chief?
10. What are the responsibilities of a fire officer who is a Mobile Command?
11. How does unity of command assist in ensuring firefighter safety?
12. List the positive aspects of utilizing Staging at an incident scene.
13. In your department, who could assume the position of Finance/Administration if needed at an incident?
14. What information is required for the transfer of Command to be effective?
15. List the considerations for establishing a command post. Who should be located at the command post? How should the command post be marked in order to be readily identifiable?

16. What alternative methods of communications could be utilized by your department at an incident scene?
17. Who benefits from a comprehensive initial status report?
18. Name the three types of status reports.

19. At an incident, how well does your department communicate with mutual-aid departments? Do you operate on the same frequencies? Are there methods of improving your current communications at an incident? How?

Suggested Readings, References, or Standards for Additional Information

United States Fire Administration (USFA)

"Incident Command System Self-Study," Guide.

National Fire Protection Agency (NFPA)

Standard 1600: Standard for Disaster Emergency Management.
Standard 1561: Standard on Emergency Services Incident Management System.
Standard 1221: Use of Emergency Services Communication Systems.

Related Courses Presented by the National Fire Academy, Emmitsburg, MD

Incident Command System for Emergency Medical Services
Introduction to Unified Command for Multiagency and Catastrophic Incidents
Fire Service Communications

Command and General Staff Functions in the Incident Command System
ICS-100—An introduction to the National Incident Command System (NIMS)
ICS-200—Basic Incident Command System
ICS-300—Intermediate Incident Command System
ICS-400—Advanced Incident Command System

Related Courses Presented by the Emergency Management Institute, Emmitsburg, MD

EOC/IMT Interface
Advanced Public Information Officer
Incident Command System, Curricula Train-the-Trainer
JFO Finance and Administration Section Chief
Documentation Unit
Demobilization/Plans Support Unit
FEMA Safety Officer Course

Fast-moving fire

KEY

crew resource
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incident scene

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